

Behavioral Aspects of Morality and Corporate Social Responsibility in Accounting

Inauguraldissertation zur Erlangung der Würde eines

DOCTOR RERUM OECONOMICARUM

der Wirtschafts- und Sozialwissenschaftlichen Fakultät

der Universität Bern

vorgelegt von

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aus Mannheim, Deutschland

2018

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Die Fakultät hat diese Arbeit am 24. Mai 2018 auf Antrag der beiden Gutachter Prof. Dr. Markus Arnold und Prof. Dr. Victor Maas als Dissertation angenommen, ohne damit zu den ausgesprochenen Auffassungen Stellung nehmen zu wollen.

ACKNOWLEDGEMENTS

I express my gratitude to everyone who supported me throughout this dissertation project. First and foremost, I sincerely thank Markus Arnold, my PhD supervisor, for his continuous guidance and encouragement throughout my dissertation. I am indebted to him for always offering his insightful and helpful thoughts about any of my research ideas as well as his constructive criticism to improve on them. I am also very grateful for his generous support in attending seminars, workshops, and conferences that offered me great opportunities to develop personally and as a researcher. I am further indebted to him for enabling me to meet and get into contact with numerous great researchers and people.

Unfortunately, I can only name a few of them at this point. I am very grateful to Greg Waymire for his incredible hospitality, invaluable help and advice as well as his support of Essay I. For this Essay I, I also gratefully acknowledge the financial support of CIMA General Charitable Trust and the Berne University Research Foundation. I further thank Jeff Hales, Bill Tayler, and Michael Williamson for their helpful comments and much appreciated suggestions. Essay II was also financially supported by the Berne University Research Foundation. Further, it benefitted from comments by Steven Kachelmeier. I am particularly grateful to Don Moser for not only the indispensable support of this essay, his continuous advice, and invaluable help throughout my PhD, but also for being a great coauthor of Essay III. I further thank Patrick Martin not only for also being a great coauthor of this Essay III, but also for his willingness to offer his helpful thoughts and advice throughout my PhD. To Ralf Frank I express my gratitude for his support of this Essay III and for being a great coauthor of Essay IV.

I also thank my colleagues from the University of Bern for creating such an enjoyable, productive, and supportive work atmosphere. Finally, I thank my family and friends who provided invaluable support of various forms: In your unique ways, you added tremendously to successfully accomplishing this dissertation project.

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PREFACE

This thesis consists of four experimental studies on “Behavioral Aspects of Morality and Corporate Social Responsibility (CSR) in Accounting”. CSR activities have a moral connotation that does not necessarily have to be in conflict with a firm’s value creation process as is indicated by the popular phrase “doing well by doing good”. Prior research has identified various reasons why and how CSR can create value for a firm and its shareholders. While this perspective describes a win-win-relation between moral and financial benefits, critics have raised concerns that agents (e.g. managers) might (mis)use firm resources for their personal benefits: they might spend money on CSR because they have personal preferences for its moral or societal benefits and not because of financial benefits for their firms. If this were the case, agents could be reproached for violating their responsibilities towards their principals. In this regard, the Nobel Prize laureate Milton Friedman wrote in his article “The Social Responsibility of Business is to Increase its Profits” in *The New York Times Magazine* (1970): “In a free-enterprise, private-property system, a corporate executive is an employee of the owners of the business. He has direct responsibility to his employers. That responsibility is to conduct the business in accordance with their desires, which generally will be to make as much money as possible while conforming to their basic rules of the society, both those embodied in law and those embodied in ethical custom.”

In my first essay, I examine agents’ moral preferences regarding Corporate Giving, which can be seen as a part of CSR. I create a setting where “doing good” is solely costly for a firm. Hence, if agents spent firm resources on a moral cause, it would constitute a form of agency costs with negative financial consequences for (potential) investors. In a 2 (Morality: morally neutral vs. immoral decision) x 2 (Source of Responsibility: agent vs. principal decision) between-subjects experiment, I analyze whether agents increase moral spending using firm resources to compensate for a prior immoral decision and whether this “moral cleansing” is affected by who is responsible for the prior immoral decision. I predict that agents increase moral spending using their principals’ resources when principals are responsible for the immoral decision, but that they do this to a lesser degree when they themselves are responsible. The underlying intuition is that agents in the former case have few concerns to use firm resources, but find it harder in the latter case to justify the use of firm resources if they themselves are responsible: further, agents’ moral identity may be less compromised when they can justify their behavior as just “doing their job”. I find that spending of firm resources on a moral cause is indeed higher when principals are responsible for an immoral decision compared to a morally neutral decision, but is not higher when agents are responsible. Thus, I identify a new form of moral agency costs arising in hierarchies from interdependencies of decisions with moral connotations because of other-regarding preferences by agents. Supplementary analyses provide further insights: regardless of the source of responsibility, financially profiting from an immoral action increases agents’ guilt and fairness concerns; however, only when principals are responsible for an immoral action, this increases moral cleansing activities. Further, I find no evidence suggesting that agents use private resources to compensate for their own immoral actions. This is consistent with agents disengaging morally when they are “doing their job” and implies that agents seem to use primarily firm resources to for moral cleansing.

Not only agents may be driven by moral preferences. In addition, investors may be willing to support firms with a strong CSR performance for reasons beyond the maximization of expected financial benefits. For example, they could decide to forego financial profits if a firm spends resources on activities with societal benefits. Accordingly, a study by Elliott, Jackson, Peecher, and White (2014) suggests that (non-professional) investors might be subconsciously affected by a firm’s CSR performance because of an unintended affective reaction. This affect could be caused by the morality of CSR activities. The authors claim that they reduce what they assume to be an affective reaction by having participants explicitly assess CSR performance

before they estimate a firm's fundamental value. Specifically, the authors find that assessing a firm's positive CSR performance before estimating the firm's value results in lower estimates than the estimates without a prior assessment. They explain their results by the correction of a misattributed affect, which would lead to better estimates. However, in my second essay, I question this explanation and design and conduct an experiment to test an alternative explanation for the study's results. According to an alternative explanation rooted in speech act theory, respondents might have understood the explicit assessment—that is supposed to reduce any unintended influence—differently than intended by the researchers and might have subtracted important information from their overall assessment of the firm's fundamental value. Following the two competing explanations, I predict two specific patterns resulting from the comparison of three conditions. However, I cannot find empirical support to claim differences between conditions for the estimates of the fundamental value. This implies that I cannot replicate the effect of Elliott et al. (2014). Given the potentially far-reaching implications of their study, knowing about the limited robustness and generalizability of their results is important.

The finding that unintended affective reactions might not play a major role in understanding investors' decisions regarding firms' CSR investments increases the importance of research on motivations of investors (not) to invest in firms with a strong CSR performance. The third essay (coauthored with Markus Arnold, Patrick Martin, and Don Moser) contributes to research on this matter. We conduct an experiment to examine German and US investment professionals' use of corporate social responsibility (CSR) disclosures when making personal investment decisions and investment recommendations to clients. We predict and find that both groups assess higher financial performance and invest more when positive CSR information is disclosed than when no CSR information is disclosed. However, these differences are only significant for German investment professionals. When CSR information is disclosed, both groups' assessments of CSR performance significantly affect their investment decisions. However, US investment professionals appear to require a higher level of assessed CSR performance than Germans before they increase their investments in response to disclosed CSR information as compared to when no CSR information is disclosed. Importantly, we also predict and find that both groups' investment behavior is not only affected by the expected financial effects of CSR activities on the firm, but also by the value they place on the societal benefits of the CSR activities. Finally, we find that when making investment recommendations to clients both groups use CSR information in essentially the same manner as they do when making personal investment decisions.

Fourth, a research note (coauthored with Ralf Frank) analyzes how including a graphic linking potential non-financial (e.g. CSR) performance drivers to financial performance measures in voluntary disclosures can cognitively affect investors under time pressure. The disclosure of information not based on accounting standards provides firms with leeway for strategic choices as to how and what to report. Graphics might affect investors because they tend to be salient and easily accessible—particularly when cognitive resources are scarce, e.g. under time pressures. We predict that graphics can direct investors' attention to particularly positive performance indicators, which can then lead to higher assessments of a firm's investment attractiveness. To test our predictions we manipulate whether investment professionals are provided with a graphic (or not) before they assess a firm as investment opportunity. Further, we examine their information acquisition using eye-trackers. Consistent with our theory, a graphic can direct investors' attention to particularly positive performance indicators and leads to higher assessments of a firm's investment attractiveness. These results are important because they suggest that investors can be guided, if not manipulated by graphics when their cognitive resources are scarce.

ESSAY 1

Agency Costs of Moral Accounting in Hierarchical Relationships

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Abstract:

Agents can face financially profitable, but immoral decisions as part of their job to increase their principals' profits. According to prior research, these decisions might create the desire to compensate for them and to balance moral accounts as it has been shown that individuals tend to increase spending on a moral cause after immoral decisions. This so-called "moral cleansing" would lead to agency costs if agents use their principals' resources to pay for the moral activities. To examine whether a financially profitable, but immoral decision results in agency costs and whether this is affected by the person responsible for the immoral decision I conduct a 2 (*Morality*: morally neutral vs. immoral decision) x 2 (*Source of Responsibility*: principal vs. agent) between-subjects experiment. I predict that agents increase their use of firm resources to pay for moral cleansing activities when principals are responsible for the immoral decision and that this moral cleansing is weaker when agents are responsible. The underlying intuition is that agents in the former case have few concerns to use firm resources, but find it harder to justify the use of firm resources in the latter case: further, agents' moral identity may be less compromised when they can justify their behavior as just "doing their job". Results support my predictions. While spending of firm resources on a moral cause is higher when principals are responsible for an immoral decision compared to a morally neutral decision, moral spending is not higher when agents are responsible. Supplementary analyses provide further insights: regardless of the *Source of Responsibility*, profiting from an immoral action increases agents' guilt and fairness concerns; however, only when principals are responsible for an immoral action, this increases moral cleansing activities. Further, I find no evidence suggesting that agents use private resources to compensate for their own immoral actions. This is consistent with agents disengaging morally when they are "doing their job". This implies that agents seem to use primarily firm resources to manage balanced moral accounts, which emphasizes the importance of an agency perspective.

Keywords: Principal-Agent-Theory, Corporate Giving, Corporate Social Responsibility (CSR), Sustainability, Moral Accounting, Moral Reasoning, Moral Balancing, Moral Cleansing, Source of Responsibility

I. Introduction

Agents (e.g. managers) can face financially profitable, but immoral decisions as part of their job to increase firms value and their principals' (e.g. firm owners) wealth (Zhong, Ku, Lount, and Murnighan 2010). For example, they might need to lay off long-time employees, use their firms' negotiation power against weaker suppliers or competitors, or feel pressure to minimize taxes by operating close to legal limits. Actions like these can threaten the agents' moral identity: while they may be justifiable or even necessary from a business perspective, they may be in conflict with the agents' societies' moral conventions. Thus, these immoral actions could trigger a process called "moral cleansing" and could cause agents to engage in moral activities. The reason for this is that individuals try to ascertain or restore their moral identity when they see it threatened or compromised by prior immoral actions (West and Zhong 2015; Jordan, Mullen, and Murnighan 2011) because they want to avoid negative feelings when their actions do not correspond with their moral self-image (Blasi 1980; Bandura 1990, 1999). In other words, they strive for balanced moral accounts.

To balance moral accounts after an immoral action, agents could use either private money or firm's resources to pay for moral activities. Whether they use private money or firm resources to pay for moral activities that are not creating financial benefits, is an important question from an agency perspective. It would be problematic if agents used firm resources because they would not maximize their firm's value and principals' wealth but pursue their own (moral) goals (Friedman 1970).

In this experimental study, I analyze whether agents use firm resources to pay for moral cleansing activities after immoral decisions and whether this is affected by the matter who is responsible for the immoral decisions. The latter is important as agents often work in a corporate hierarchy. While they can be directly responsible for immoral decisions, they can also get indirectly involved in these. For example, depending on their positions, superiors or shareholders might apply pressure on them or order them to make certain decisions; similarly, agents might

be overruled by a collective decision or face strong expectations by peers or subordinates. Thus, agents may not only be responsible for their own actions, but may also be associated with decisions made by others that are potentially not the decisions they would have made. Who is responsible for a decision can affect how it is construed and judged (Gino, Norton, and Weber 2016; cf. overviews by Tetlock 1985 and Harvey, Town, and Yarkin 1981) and, therefore, could affect agents' moral cleansing decisions.

Prior research supports the view that agents' moral reasoning might interfere with their task to increase their firm's value. Consistent with a point of view considering moral expenditures problematic from an agency perspective, some archival studies suggest that agents' decisions to "do good" may reduce their principals' wealth. For example, Corporate Social Responsibility (CSR) expenditures may have financial benefits for firms, but can also be an important field where agency problems can occur due to their inherent moral connotations (Hales, Matsu-mura, Moser, and Payne 2016). Specifically, firms' charity donations may be associated with CEOs' personal charity preferences and capital markets may value cash holdings less for firms with a higher level of CSR spending (Masulis and Reza 2015). Further, in line with agency problems, increasing ownership and monitoring may decrease CSR spending (Cheng, Hong, and Shue 2013; Barnea and Rubin 2010).

Consistent with moral balancing, further archival studies report evidence that firms may be socially both responsible and irresponsible (Strike, Gao, and Bansal 2006; Ormiston and Wong 2013), that firms with a positive reputation may be more tax aggressive (Bai, Lobo, and Zhao 2017; Davis, Guenther, Krull, and Williams 2016), and that CSR expenditures may be used to license earnings management (Prior, Surroca, and Tribó 2008). These findings can be explained by individuals' preferences for balanced moral accounts: a perceived surplus of moral deeds can license immoral deeds and a perceived surplus of immoral deeds can create the need for moral cleansing.

Applying this theory to a principal-agent-setting, I expect agents to experience guilt and fairness concerns after an immoral action and –compared to a morally neutral decision– to increase their use of firm resources to pay for moral activities when the *Source of Responsibility* matches the source of resources (i.e. principals’ decision and principals’ resources). However, as prior research suggests that individuals judge their own actions differently and more leniently than the actions of others, I expect the degree of moral cleansing to be affected by the *Source of Responsibility*. Specifically, I predict that –compared to a morally neutral action– agents increase their use of firm resources to pay for a moral cause after an immoral action less when agents are responsible for an immoral action than when principals are responsible for the same immoral action. In case of the former, a match of *Source of Responsibility* and the source of resources would suggest the use of private money and not firm resources. In addition, agents can refuse personal responsibility by justifying immoral actions as “doing their job”. This can protect their moral identity and provides a possibility to disengage morally (Bandura 1990, 1999; Barkan, Ayal, Gino, and Ariely 2012; Shalvi, Gino, Barkan, and Ayal 2015; Gino et al. 2016). As an additional way to disengage morally, agents can shift the responsibility to balance moral accounts to principals. In contrast, relying on principals is less credible when these are responsible for an immoral decision.

Conducting an experiment allows disentangling different reasons or motivations for moral spending. For example, firms’ charitable donations might rather serve agents’ moral than their firms’ interests, but might also increase employee motivation (Balakrishnan, Sprinkle, and Williamson 2011; Douthit, Martin, and McAllister 2017). Thus, when using archival data, it may be hard to tell whether firm donations are rather meant to increase firm value or to serve agents’ personal preferences, e.g. moral balancing. In an experiment, I can create a setting where any expected future financial benefits are excluded by design in order to examine agents’ motivation for corporate giving: “doing good” can be designed to balance moral accounts, but to decrease principals’ profits.

Hence, I conduct a 2 x 2 between-subjects experiment to analyze whether agents increase moral spending after experiencing and financially profiting from a legal, but immoral decision. Participants form dyads of firm owners (as principals) and CEOs (as agents): thus, agent decisions directly affect other individuals in the role of principals and residual claimants of firm profits. I manipulate the factors *Morality* (morally neutral vs. immoral decision) and *Source of Responsibility* (principal vs. agent decision). After this decision (i.e. the manipulation), agents can decide whether to spend money on a moral cause (i.e. supporting a socially orientated initiative) and whether to use firm resources (i.e. in form of a discount) or private money (i.e. in form of a donation) to pay for it. Thus, I can test whether agents engage in moral cleansing and –if so– which resources they use. By design, discounts reduce firm profits. Hence, firm resources spent on moral cleansing activities would constitute agency costs due to moral accounting whereas private money spent would be unproblematic from an agency perspective. In addition, I can examine whether this moral balancing is affected by whether the prior immoral decision was made by agents or principals.

Results support my predictions. Specifically, they show that agents increase their use of firm resources to pay for a moral cause when principals are responsible for a prior immoral decision, but not when agents are responsible for the same decision. Consistent with my theoretical reasoning regarding the psychological process, I find supplemental evidence that –regardless of *Source of Responsibility*– an immoral action increases agents’ guilt and fairness concerns; however, only when principals are responsible, these fairness concerns lead to an increase in moral activities. In addition, I find no evidence that agents use private money to compensate for their own immoral actions. This is consistent with agents disengaging morally from decisions made when they are “doing their job”. This underlines the importance of examining the issue of agency costs due to moral accounting because agents primarily seem to use firm resources to balance moral accounts.

This study makes several important contributions. Most importantly, I identify a new form of agency costs caused by interdependencies of decisions with (im)moral connotations and other-regarding preferences by agents (Laffont and Martimort 2009). Results suggest that moral accounting can cause agents confronted with immoral actions by principals to engage in moral cleansing activities costly to the firm. Thus, firms might need to consider these consequences from financially profitable, but immoral decision. These findings might be particularly important for the design of control systems in certain industries, job functions or in firms with strong hierarchies. This study further suggests an interesting perspective on the role of agents' moral sensitivity: while this can be associated with reduced agency costs in some cases –e.g. lower control costs because of agents' honesty or trustworthiness (Evans, Hannan, Krishnan, and Moser 2001; Beccerra and Gupta 1999)– it could also increase agency costs when agents are confronted with immoral decisions. Hence, this study offers a new and important perspective on agency conflicts to be explored by future research.

This study further contributes to research on CSR and possible agency problems. It may be important for firms to consider agents' moral preferences when designing managerial control systems in this area as agents might use the moral connotation of CSR activities to manage moral accounts with firm resources (Merritt, Effron, Fein, Savitsky, Tuller, and Monin 2012; Gneezy, Imas, and Madarász 2014; Cascio and Plant 2015; Effron and Conway 2015). Moreover, as CSR activities frequently include uncertainty about expected financial benefits (Moser and Martin 2012; Martin and Moser 2016), it may be particularly hard to differentiate between agents' motivations and to design control systems. On the other hand, I conjecture that these moral aspects of CSR (including but not limited to corporate giving) could be a tool to curtail these agency costs as firms might use it to signal to agents that moral accounts are balanced on a firm level. Firms might use moral expenditures for impression management: spending resources in a calculated and targeted way to conserve or proactively create a moral image and

reputation might, therefore, be an investment to prevent agents from seeking uncontrolled actions or might license them to immoral decision in their firms' interest.

From a theoretical perspective, this study extends research on moral balancing by testing its practical reach and implications in an important corporate setting, a principal-agent-setting. Specifically, I extend prior research by adding a possibility for individuals to use money not belonging to themselves (i.e. firm resources) and an additional source of responsibility (i.e. the residual claimant of these firm resources). Finally, agents have another moral rationale to invoke as their job entails the duty to make decisions that are good for their firm: this makes the moral trade-off more complex and offers agents the possibility to disengage morally.

The remainder of this paper is structured as follows: in section 2, I provide the theoretical background for this study and develop my hypotheses; section 3 describes the methodology of my study. In section 4, results are presented before section 5 concludes.

II. Theory and Development of Hypotheses

Background

Prior research has described how individuals internally balance their moral accounts: e.g., by enduring personal disutility to compensate for prior immoral actions (Wallington 1973; Harris, Benson, and Hall 1975; Gneezy et al. 2014). The underlying reason for this is that individuals are part of a society's attitudes towards morality, and, in general, like to perceive themselves as being moral. Thus, they want to avoid discrepancies between their moral self-image and their actions because this creates feelings of dissonance (Blasi 1980; Bandura 1990, 1999; Stets and Carter 2011). However, maintaining a perception of being moral is a dynamic and idiosyncratic process: individuals have some degree of freedom about the level of morality they perceive to be adequate and about how they trade-off moral with immoral actions providing

advantages such as increasing personal wealth (Nisan 1990, 1991).¹ This dynamic process allows for deviations from a morally ideal point to which individuals can return (Gómez-Miñambres and Schniter 2017; Zhong et al. 2010).

These deviations can go in two directions. On the one hand, individuals might perceive a surplus of moral actions allowing for some immoral actions; on the other hand, they might perceive a deficit of moral actions and feel the need to compensate for this by engaging in moral actions. The first phenomenon is called *Moral Licensing*, the latter *Moral Cleansing* (Mullen and Monin 2016; Blanken, van de Ven, and Zeelenberg 2015; Merritt, Effron, and Monin 2010; West and Zhong 2015; Ayal and Gino 2012). Both have in common that they describe a form of balancing moral accounts, which I refer to as *Moral Accounting*². For example, individuals claim a higher (lower) moral identity, state higher (lower) prosocial intentions, and cheat less (more) after recalling their own immoral (moral) behavior (Jordan et al. 2011).

Specifically in the case of moral cleansing, individuals engage in moral activities to relieve feelings of guilt and unfairness elicited by immoral actions. Emotions, e.g. guilt, can serve as inputs for simultaneous or subsequent judgements (Schwarz and Clore 1983, 2003; Forgas 2006). Specifically, guilt can be triggered by immoral actions, is a primary emotion (Izard 1977) as well as an action-eliciting emotion and central in moral cleansing (Baumeister, Stillwell, and Heatherton 1994; Harris et al. 1975; Haidt 2001, 2003). Guilt and fairness concerns can then trigger moral actions to relieve these feelings (Darlington and Macker 1966; Ding, Xie, Sun, Li, Wang, and Zhen 2016): while there exists disagreement about the relative importance of emotional and rational inputs in this process (Zajonc 1980; Haidt 2003; Keltner, Horberg, and Oveis

¹ Increasing personal wealth or a firm's value can be considered moral actions from a business perspective as well: however, they are often in conflict with society's attitudes towards morality and their implications for moral behavior. This study is about the tension arising from conflicts with the latter.

² While this study focusses on the cleansing aspect of the *Moral Accounting* framework, the licensing aspect turns the order of events to its head, but is part of the same broader theoretical framework (Sachdeva, Iliev, and Medin 2009). Related concepts are *Emotional* or *Conscience Accounting* or *Compensatory Ethics* (Levav and McGraw 2009; Gneezy et al. 2014; Zhong et al. 2010). Importantly, my use of the term *Moral Accounting* differs from the use in Murphy, Patvardhan, and Gehman (2017).

2006) the two are highly intertwined. Perceived fairness is a downstream, elaborate, and complex result of a process affected by guilt.

Even though balancing moral accounts may play an important role in a principal-agent setting because agents might use the principals' resources to pay for it, its implications from an agency-perspective have not been examined before. In a corporate setting, agents can face decisions that are on the one hand morally critical or even immoral and on the other hand justifiable or necessary in order to increase the firm's success (Zhong et al. 2010). Thus, agents' moral identity could be threatened and they could look for ways to engage in moral cleansing activities. Agency problems could arise due to interdependencies between business decisions with moral connotations when agents use their principals' resources to serve their own moral preferences thereby reducing firm profits. However, when making predictions regarding agents' use of firm resources, it may be important to differentiate with regard to the *Source of Responsibility*³.

Development of Hypotheses

Effect on Moral Spending when Principals are Responsible for an Immoral Decision

When principals are responsible for an immoral decision, agents' moral accounts are affected by association: they are made accomplices to the immoral action and profit from it. Thus, I expect them to experience feelings of guilt and unfairness (Gino, Gu, and Zhong 2009) because the principals' decision provides agents with morally "dirty money". I expect these feelings to create a desire to cleanse the prior immoral action morally. However, I do not expect agents to use private money instead of firm resources to cleanse the principals' immoral decision morally. Rather, there exist several reasons to expect agents to use firm resources to balance moral accounts.

As principals are responsible for the immoral action, agents have an easy target to blame. Agents can, therefore, justify using the principals' resources under their control because the

³ This factual shift of responsibility can be understood as an extreme case of the psychologically more nuanced concept *Locus of Control* where a low internal control corresponds with a lower perceived responsibility (Trevino 1986; Trevino and Youngblood 1990; Lefcourt 2014; Detert, Trevino, and Sweitzer 2008).

source of responsibility (i.e. the principal's decision) matches the source of resources (i.e. the principal's resources). In addition, prior research has shown that individuals tend to judge someone else's actions more harshly and as more immoral to reassure their own moral self-image when experiencing ethical dissonance (Barkan et al. 2012; Ayal and Gino 2012). This could intensify the agents' tendencies to use firm resources to pay for moral spending.

One reason why individuals might refrain from blaming someone else for committing immoral actions are situational factors excusing these actions. In this case, agents might also refrain from using firm resources. Following another morale rationale, e.g. "doing a job" as an agent (Friedman 1970), would be an example of such a situational factor. However, such a moral rationale is not apparent to agents as principals are the residual claimants of the profits generated by the principals' immoral action. Thus, I expect agents to judge principals as being self-servingly willing to commit an immoral action for personal enrichment.⁴ Consequently, agents would be unhampered to hold principals accountable for their prior immoral action. Without this other rationale as excuse, agents would be unhampered to use the principals' resources under their control to pay for the moral cleansing activities.

Another reason for agents not to use firm resources to pay for moral spending would be to rely on principals to manage and balance moral accounts. In this case, they could credibly refuse the responsibility to balance moral accounts (Bandura 1990, 1999) and leave this decision to principals. Agents, in general, might understand it as their task to generate firm profits and then rely on principals as residual claimants to take care of any moral cleansing of prior immoral actions (Friedman 1970). However, relying on principals to balance moral accounts may hardly be justifiable for agents when principals are responsible for a prior immoral decision because

⁴ The fundamental attribution error or fundamental attribution bias would intensify this reasoning and would let agents judge the same actions differently depending on the individual responsible for it (Barkan et al. 2012; Gino et al. 2016; cf. overviews by Tetlock 1985 and Harvey et al. 1981). Individuals tend to attribute their own negative behavior to situational (instead of dispositional) factors, which helps disengaging morally; however, they tend to attribute negative behavior of others to dispositional (instead of situational) factors, which makes it easier to blame them.

agents can draw inferences from this decision about the principals' future behavior. Thus, agents may find it hard to refuse and shift responsibility to principals to compensate for the immoral action. Rather, agents may feel the need to act themselves to balance moral accounts and to use firm resources to pay for it.

Because of good reasons why agents would use firm resources to pay for moral spending and the lack of reasons to refrain from doing it, I expect agents to act upon their need to balance moral accounts and to use firm resources to pay for this.

H1: When principals are responsible, agents increase their use of firm resources to pay for a moral cause after an immoral action compared to a morally neutral action.

Effect on Moral Spending when Agents are Responsible for an Immoral Decision

Directional predictions are harder to make when agents are responsible for an immoral action. In this case, I expect them to experience feelings of guilt and unfairness due to their own actions. However, it is not clear whether agents act upon the desire to balance moral accounts and use firm resources to pay for a moral cause. Agents might find it hard to justify using firm resources when they themselves are responsible for a prior immoral decision.

There are still reasons to expect that agents use firm resources to pay for moral cleansing. Agents would be financially better off by using firm resources and not their private money when they have this opportunity (Pronin, Olivola, and Kennedy 2008). Further, this would be justifiable as agents can blame their job duties or firm for putting them in a position where they are required to make an immoral decision. Individuals, in general, have various ways to avoid accepting personal responsibility and blame someone or something else for any negative consequences of their behavior (Bandura 1990, 1999; Shu, Gino, and Bazerman 2011). After all, the residual claimants of the financial benefits created by the agents' immoral actions are the principals, which can help to justify using firm resources.

Another reason would still point in the same direction that firm resources are used to balance moral accounts, but would suggest a smaller degree of it. Agents might not shift the entire

responsibility to their firm to justify using firm resources for moral balancing, but might decide to use both firm resources and private money to pay for moral activities. In this case, responsibility would be shared and both private and firm donations would be used to balance moral accounts. However, this shifting (of partial) responsibility could also reach a point where a directional prediction cannot be made any more. When agents accept enough personal responsibility and experience a discrepancy between their moral self-image and actions they are responsible for, matching the source of responsibility (i.e. the agents' decision) to the source of resources would suggest using the agents' private money and not firm resources. After all, the latter would mean using another individual's resources who is not directly responsible for the immoral action and who is the principal whose interests' agents are supposed to pursue.

There are other reasons that could work against predicting an increase in the use of firm resources. Agents' moral identity might be less threatened when they commit immoral actions on the job. This would reduce their general need to engage in moral cleansing in the first place. Compared to the case when others are responsible for an immoral decision, individuals hold themselves accountable differently for their own immoral actions and tend to make self-serving judgments (Miller and Ross 1975; Nisbett and Ross 1980; Loewenstein, Issacharoff, Camerer, and Babcock 1993; Babcock and Loewenstein 1997; Gino et al. 2016). In general, individuals find it harder to blame themselves than to blame someone else. Further, they are adept to disengage morally and rationalize their behavior in order to reduce feelings of dissonance and avoid a negative impact on their moral self-image (Festinger 1957; Murphy 2012; Shalvi et al. 2015). Individuals have several tools at their disposal how to construe their actions in order to protect their moral self-image. Individuals can, to a certain degree (Brown, Tamborski, Wang, Barnes, Mumford, Connelly, and Devenport 2011; Haisley and Weber 2010), take self-protecting and self-serving actions to disengage from acts that may be evaluated as being immoral (Gino et al. 2016). One way to accomplish this is the importance they attribute to situational factors, as actions are not judged on absolute levels (Trevino 1986; Trevino and Youngblood 1990;

Aquino, Freeman, Reed, Felps, and Lim 2009). For example, individuals may create purposefully more ambiguity with regard to the impact of an otherwise clearly immoral decision to create a “moral wiggle room” that facilitates self-interested behavior (Dana, Weber, Kuang 2007; Haisley and Weber 2010; Hamman, Loewenstein, and Weber 2010; Bartling and Fischbacher 2012; Church, Hannan, and Kuang 2014).

One important situational factor that allows agents to disengage morally is the existence of another moral rationale they can claim to follow. Specifically, agents can credibly detach their moral identity from an immoral decision as they can credibly claim that they had to make the decision as part of their job to increase their firm’s value. This rationale can be used to reframe and justify a morally questionable decision (Cohn, Fehr, and Marechal 2014; Hamman et al. 2010). Consistent with this theory, Church, Hannan, and Kuang (2012) find that, in a budgeting study, agents misreport more when they can justify this behavior by another rationale, such as sharing the slack created with another agent.

Another reason that could result in agents not using firm resources is the possibility that they can shift the responsibility to balance moral accounts to the principals as the residual claimants of firm profits. Compared to when principals are responsible for an immoral action, relying on these to cleanse the agents’ actions is credible and justifiable when agents are responsible.

Thus, agents can use various coping mechanisms to detach their moral identity from the negative impact of the immoral action they have taken. These coping mechanisms would allow agents to refuse personal responsibility, which would decrease the general impact of the immoral action on the agents’ moral accounts and, thus, decrease the ex-ante overall need for moral cleansing. Agents can still evaluate the action they are responsible for as being immoral unfair, but might not feel the responsibility to balance moral accounts.

Finally, competing theory regarding moral consistency might even explain an overall decrease in moral spending when agents are responsible for a prior immoral action. This could happen when a prior immoral action made the identity as being self-interested particularly

salient (Aquino and Reed 2002; Aquino et al. 2009; Bryan, Adams, and Monin 2013). For example, in support of moral consistency, Johnson, Martin, Stikeleather, and Young (2017) find evidence that abstractly recalling past mutually beneficial actions leads to disproportionately greater moral behavior among agents than for either abstractly recalling selfish or concretely recalling mutually beneficial actions. The reason for this would be that showing consistent behavior (Festinger 1957; Joosten, van Dijke, van Hiel, and de Cremer 2014) is valued higher than having balanced moral accounts. While consistency and balancing arguments can be aligned on a more abstract level because balancing allows keeping a consistent moral identity, consistency can limit balancing behavior in specific situations. Following the consistency argument, agents might even be expected to decrease moral spending after an immoral action. However, consistency is rather associated with an abstract construal of the identity whereas concrete construal is rather associated with balancing (Lieberman and Trope 1998; Trope and Liberman 2003, 2010; Conway and Peetz 2012; Mullen and Monin 2016) and I expect the latter to prevail in the daily business operations. Thus, I rather expect agents to construe immoral decisions as resulting from specific and single situations (concrete construal) and not as symptoms of a general identity as being immoral individuals (abstract construal).

These considerations make it hard to make a directional prediction regarding the degree of moral cleansing activities paid for with firm resources when agents are responsible for a prior immoral action. The fact that firm resources are available and agents can blame their job for putting them in a situation where they are required to make an immoral decision suggests the use of firm resources to balance moral accounts. However, arguments discussed above can explain how agents may still experience feelings of guilt and unfairness, but not increase their use of firm resources to balance moral accounts. Thus, fairness concerns alone might not be sufficient to lead to moral cleansing activities paid for with firm resources when agents are responsible for an immoral action. Specifically, agents could accept (partial) personal responsibility, which would work against an increased use of firm resources. Further, agents might detach their

moral identity and disengage morally when they make immoral actions on the job, which would be expected to decrease the general need of moral cleansing. Finally, consistency arguments could even explain a decrease in overall moral spending.

As there are reasons to expect an increase in moral spending paid for with firm resources and reasons questioning this expectation, I do not make a directional prediction regarding the simple effect of *Morality* when agents are responsible for a prior immoral action. However, I predict an interaction of *Morality* and *Source of Responsibility*: even if agents increased moral spending using firm resources after an immoral action for which they are responsible, I expect them to do this to a lesser degree than when principals are responsible for a prior immoral action.

H2: Compared to a morally neutral action, agents increase their use of firm resources to pay for a moral cause after an immoral action less when agents themselves are responsible for an immoral action than when principals are responsible for the same immoral action.

III. Method

Design

To test my hypotheses, I designed and conducted a 2x2 experiment (cf. the appendix), in which participants were assigned the roles of either a principal or an agent. Specifically, in my experimental setting, principals were given the role of a firm's owner and agents were given the role of the firm's CEO. Two factors were manipulated between-subjects: *Morality* (morally neutral vs. immoral decision) and *Source of Responsibility* (principal vs. agent decision).

I manipulate *Morality* by asking participants to imagine a role-play situation and by providing participants with information regarding the morality of the decision to defend their firm in court against compensation claims by a business partner. In all conditions, the participants' firm had been involved in the construction of a community college in a poor neighborhood. This construction had been delayed, which had caused additional costs to the business partner. To cover the incurred costs caused by the delay, the business partner was seeking damages from the participants' firm. The reasons for this delay depended on the condition. In the

conditions with a morally neutral action, the firm had not been responsible for the delay. However, in the conditions with an immoral action, the firm had been fully responsible for the delay. The firm now had to decide whether to pay the compensation, whether to seek a settlement to avoid a lengthy and costly try or whether to defend itself in court against these claims. In all conditions, succeeding in court was highly likely. In the conditions with a morally neutral action, the reason was that the firm had not been responsible for the delay. Thus, defending the firm in court is a morally neutral decision. However, in the conditions with an immoral action, the firm was fully responsible for the delay. Here, winning in court was highly likely because the firm had the possibility to nullify the liability clauses as the opposing party had made a formal error in the contract: by acting ruthlessly, but legally, the firm's lawyers would be able to exploit this loophole. As it was made clear that this maneuvering was according to the law, defending the firm in court was a legal decision with an immoral connotation.

In all conditions, the decision was made to defend the firm in court: depending on the condition, this implied either a morally neutral or an immoral action. I manipulate the factor *Source of Responsibility* by asking participants to imagine that the decision to defend the firm in court had been made by either the principal or the agent.

All participants were then informed that their firm had been successful in court and had not had to pay damages. This court decision secured the firm's profit (and, therefore, the principal's profit as residual claimant) and a bonus payment for the agent. Thus, both principals and agents profited financially from the either morally neutral or immoral decision to defend the firm in court. I expect the immoral action to threaten the agents' moral identity: indirectly as accomplices when principals were responsible for the prior immoral action or directly when agents themselves were responsible.

To examine the effect of the manipulations on their moral spending, agents were offered to engage in moral activities. Importantly, they could pay for these moral activities either with firm resources or with private money. To operationalize the former, agents were offered to grant

a discount to a socially orientated initiative on behalf of their firm in an unrelated second project. The fact that the moral action affected an unrelated project is important because the support could not be seen as repairing an existing business relation damaged by the legal dispute. Granting a discount provided agents with an opportunity to balance moral accounts using firm resources. It was made clear that agents could not expect any future financial benefits from this decision for their firms: any discount granted would solely support a moral cause. As, by design, this donation could not result in future financial benefits, any money spent would imply a financial loss for the firm (and the principals): hence, I can conclude that these donations are agency costs.

The amount of firm resources spent on a moral cause constitutes my primary dependent variable. In addition, agents were given an opportunity to pay for the moral activity with their private money: they were offered to donate privately to the same socially orientated initiative. This was important to offer agents a true decision about which resources they would like to use to pay for moral activities and allows an accurate measurement of the agency costs.

The amounts designated by participants to be spent on the moral cause, i.e. discounts granted and private donations, affected the participants' earnings. Discounts were deducted from the firm profits (and, therefore, from the principals' earnings) and donated to a real world charity. Equally, all private donations were deducted from the participants' earnings and donated to the same charity.

Participants and Detailed Procedures

Participants were 246 students from a US university forming 123 dyads. One dyad consists of a principal (i.e. the firm's owner) and an agent (i.e. the firm's CEO). Participants were recruited randomly, invited to the university's laboratory, and seated in front of individual computer stations. The z-Tree program (Fischbacher 2007) assigned condition, dyad, and role randomly. Instructions were read aloud and displayed on the computer screens. Participants were asked to read all instructions and materials regarding the case very carefully, to take a role-play situation seriously, and to make deliberate decisions that would remain unknown to other participants.

Participants were told to imagine a profit-orientated construction firm whose owner (i.e. the principal) would be the residual claimant of the business periods' firm profits who had hired the CEO (i.e. the agent) to run the firm's business operations. Participants were then informed about their role as either principal or agent. Participants were also informed that the principals could not know all agent decisions and results thereof and, thus, that there existed information asymmetry. Participants knew that the experiment would last only one period and that their decisions were relevant for their payments. Participants' earnings beyond the show-up fee depended on the participants' decisions and –for principals– a random element added to the firm profit. The latter was introduced to the principal-agent-setting such that principals knew that the outcome of this business period was influenced not only by the agents' decisions, but also by (good or bad) luck. Specifically, a random number (a whole number between -2 and +2) was added to the firm profits to reflect the influence of chance.

Participants were then shown a screen containing the manipulations. Specifically, they were asked to imagine that they had just experienced the following situation. Their firm had been involved in the construction of a community college in a poor neighborhood: this construction had been delayed, which had caused additional costs to the business partner. In the morally neutral (immoral) conditions, the firm had not been (had been fully) responsible for this delay.

To cover the incurred costs caused by the delay, the business partner was seeking damages from the participants' firm. The firm had to decide how to react to these claims and whether to defend itself in court. In both the morally neutral and the immoral conditions, according to the firm's lawyers, succeeding in court was highly likely. In the morally neutral conditions, the reason was that the firm had not done anything wrong. In the immoral conditions, the firm had the possibility to nullify the liability clauses because the opposing party had made a formal error in the contract and –by acting ruthlessly, but legally– the firm's lawyers would be able to exploit this loophole. It was made clear that this maneuvering was according to the law: defending the firm in court was a legal decision with an immoral connotation.⁵

Still on the same screen, the second manipulation of the factor *Source or Responsibility* took place. Participants were told that either the principal or the agent made the (morally neutral or immoral) decision to defend the firm in court against the compensation claims.

Both principals and agents were then informed about the positive outcome of the court's decision that the firm did not have to pay any damages. This secured the firm's profit from the construction project. They further learned about the financial implications of this decision. In addition to their fixed wage of \$11, agents received \$9 as a bonus payment for this project: this guaranteed that agents were affected by and financially profiting from the decision to go to court. Principals were informed that this decision secured a project profit of \$11(net of the agents' bonus payments) contributing to this period's firm profits. However, agents as well as principals were informed that the business period was not finished and this was not the only project. All participants then advanced to their decision screens where the dependent variables were elicited.

⁵ The way I operationalized the manipulations allowed me to control experimentally the immoral decision. For example, I did not have to rely on participants recalling an individual and relatively unspecified situation where they committed an immoral act, but could create a setting that was common to all participants and clearly referring to a business context.

On this screen, agents and principals were informed about another and unrelated project in the same business period, a renovation project of a community center in a different rather poor area. The works were administered by an initiative with a strong social orientation whose representatives were expecting positive effects for their community from these renovations works. The initiative's funds sufficed for some basic works; however, to achieve more of their goals, the initiative needed to find ways to fund an extension of the project. Thus, the initiative's representatives asked agents for a private donation to the initiative as well as for a discount on behalf of the firm; principals were only asked for a private donation to the initiative. The discount granted constitutes a firm donation with a moral connotation, but, by design, implied a financial loss for the firm.

Principals knew less than agents about this business decision. Only agents knew about the request for a firm donation. In addition, only agents knew the potential maximum profit (\$9) this project could contribute to the firm profits if no discounts were granted. Thus, principals could not have specific expectations regarding the business period's firm profits. Further, (good or bad) luck in form of a random number (a whole number between -2 and +2) influenced firm profit. Thus, principals were only provided with the coarse information that, at the end of the business period, they could expect a final firm profit between \$9 and \$22 including the random element. Agents were informed about their information advantage, their principals' limited information and that the latter could only expect a firm profit in the range between \$9 and \$22. Thus, agents' decisions to grant a discount could not be detected by principals and agents were made aware of this.

Importantly, agents and principals were informed that their dyad partner was asked for a private donation without learning the amounts donated. Thus, participants were not in a position where they had any reason to think about making a moral spending decision in lieu of the other participants. Specifically, agents could leave the decision to engage in moral activities

with money from the firm's profits to the principals; i.e., agents had no need or reason to anticipate principals' moral spending preferences and execute it in lieu of them. Thus, any discounts granted constitute a form of agency costs as they only result from the agent's personal moral preferences and do not benefit principals.

Agents were asked to indicate the amount they would privately donate (between \$0 and \$9) and the amount they would grant as a discount on behalf of their firm (between \$0 and \$9). Hence, to balance moral accounts they were given the choice between two resources to pay for moral activities. This design choice reflects the two options agents have in the real world and differs decisively from conventional research settings in prior research. The order of these two questions was counterbalanced to control for any order effects. While the agents' earnings were reduced by their private donations, they were not affected by the firm donations.

Principals were also asked to indicate the amount they would privately donate. As at this point, principals could not know the firm profits and, consequently, their personal earnings, I used the strategy method to elicit the amounts principals were willing to donate privately. Specifically, principals were asked how much they would want to donate privately to the initiative in each of the possible firm profits between \$9 and \$22 (only whole numbers).⁶ All moral spending, i.e. all private and firm donations affected participants' payments. The amounts donated privately by both agents and principals to the initiative were deducted from the personal earnings and donated to the charity *Habitat for Humanity*.⁷ The amounts granted by agents as firm discounts, were deducted from the firms' profits (and, thus, from the principals' personal earnings) and donated to the same charity. Thus, the earnings (π , in \$) of the participants were:

$$\pi_{\text{AGENT}} = \text{WAGE}_{\text{FIX}} + \text{BONUS} - \text{DONATION}_{\text{PRIV}}$$

$$\pi_{\text{PRINCIPAL}} = \text{PROFIT}_{\text{FIRST}} + (9 - \text{DONATION}_{\text{FIRM}}) + \text{RANDOM} - \text{DONATION}_{\text{PRINCIPAL}}$$

⁶ I provide these details to give an adequate impression of the setting in which agents made their decision. However, as the principals' moral reasoning is not the focus of this research study, this data is not further used in this paper.

⁷ While participants were informed in advance about the general purpose of the real-world charity receiving a donation, the specific name of the charity was only disclosed when participants were informed about their earnings.

WAGE_{FIX} is the fixed wage of agents and is equal to 11, BONUS is the agents' bonus payment for the first project and is equal to 9, and DONATION_{PRIV} is the amount privately donated by agents. PROFIT_{FIRST} is the firm profit from the first project net of the agents' bonus and is equal to 11, DONATION_{FIRM} is the amount granted as a discount by agents, RANDOM is a randomly determined whole number between -2 and +2 to reflect the role of chance, and DONATION_{PRINCIPAL} is the amount privately donated by principals.

Participants then answered PEQ questions about the case, their general attitudes, and their demographics. Finally, participants were informed about their personal earnings, and were paid individually. On average, participating in the experiment including the payment procedure took less than 45 minutes.

IV. Results

Manipulation Checks

To check whether the *Source of Responsibility* manipulation was successful, I test whether participants correctly remembered who had made the decision to go to trial. 29 agents failed this manipulation check and are excluded from my analyses.⁸ Figure 1 shows the final number of participants per condition included in my analyses.

Figure 1: Research Design and Number of Participants by Condition

		Morality	
		<i>Neutral</i>	<i>Immoral</i>
Source of Responsibility	<i>Principal</i>	24	30
	<i>Agent</i>	20	20

Note: Participants are only included in the analyses if they correctly answered to the question who had made the decision to go to trial.

⁸ Inferences for the agents' decisions remain unchanged independent of whether the whole sample or the reduced sample is used for the analyses.

To check whether the *Morality* manipulation was successful, I first analyze the answers to two questions about the perceived morality of the decision to go to trial. Participants were asked a) how fair, from a moral perspective, they had found the decision to go to court, and b) how guilty they had felt. Participants' answers are in line with the *Morality* manipulation for the morally neutral vs. immoral conditions (fairness: 3.82 vs. 2.36, guilt: 1.64 vs. 2.78; both $t \geq 3.07$ and $p < .01$, two-tailed, untabulated).⁹ Moreover, agents in the immoral conditions do not feel significantly less guilty when principals made the decision instead of them (2.90 vs. 2.60, $t = .54$, $p > .58$, two-tailed, untabulated). This supports the notion that agents experience guilt by association (Gino et al. 2009) even if they are not directly responsible for the immoral decision from which they profit. In addition, I asked participants whether they thought that the firm was morally entitled to the profit from the initial project. Compared to participants in the immoral conditions, participants in the morally neutral conditions rather considered this to be the case (1.68 vs. 2.84, $t = 3.61$, $p < .01$, two-tailed, untabulated). Taken together, these results indicate a successful manipulation of *Morality*.

Descriptive Statistics

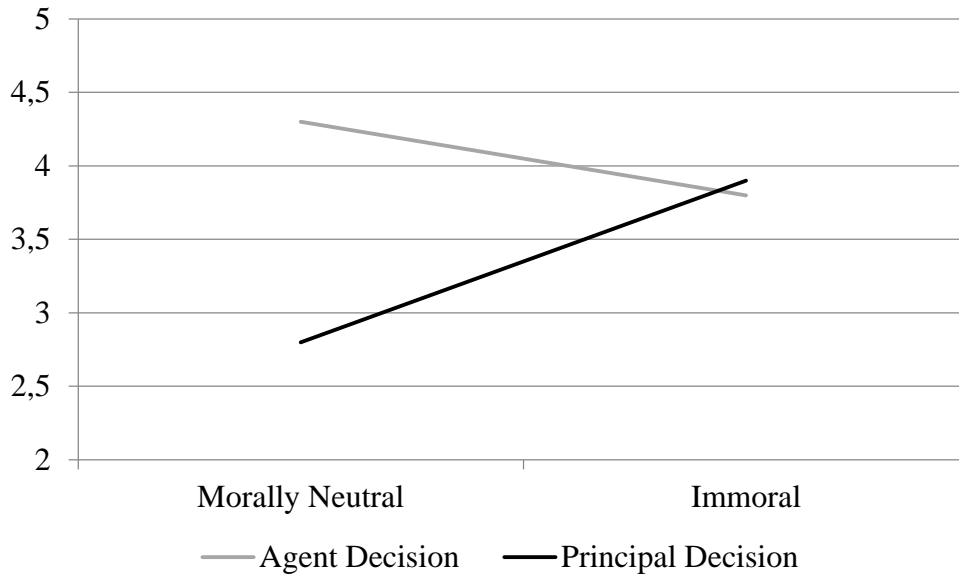
The primary dependent variable to test the hypotheses is referred to as $DONATION_{FIRM}$ and is the amount of firm resources agents decided to spend on a moral cause. As reported in Table 1 and displayed in Figure 2, when principals are responsible, agents increased moral spending by 42% after an immoral decision (\$3.90) compared to a morally neutral decision (\$2.75).

⁹ If increasing personal wealth and firm value were considered as the only relevant moral actions (Friedman 1970), I should not observe significant differences. Importantly, the existence of this possible additional moral rationale, hence, works against finding results.

Table 1: Descriptive Statistics (Mean, Median, [Standard Deviation]) for Key Measures

Morality	Neutral		Immoral	
Source of Responsibility	Principal	Agent	Principal	Agent
GUILT	1.71	1.55	2.90	2.60
	1	1	3.52	3.52
	[1.83]	[1.54]	[1.79]	[2.09]
FAIRNESS	3.71	3.95	2.50	2.15
	4	4	2	2
	[1.49]	[1.36]	[1.74]	[1.60]
DONATION _{FIRM}	2.75	4.30	3.90	3.75
	2	4.5	3	3
	[2.35]	[2.23]	[2.63]	[2.43]

Figure 2: Firm Donations by Condition



Notes: 94 agent participants passed the manipulation check question about who had made the decision to go to court and were included in the analysis. “Morally Neutral”, respectively “Immoral” refers to the manipulated factor *Morality*, “Agent Decision”, respectively “Principal Decision” to the manipulated factor *Source of Responsibility*. The dependent variable is firm donation, specifically the amount granted by agents as a discount to a socially oriented initiative [scale from \$0 to \$9].

This is consistent with H1 predicting that –when principals are responsible–agents increase their use of firm resources to pay for a moral cause after an immoral action compared to a morally neutral action. When agents are responsible, they appear to decrease moral spending slightly after an immoral decision (\$3.75) compared to a morally neutral decision (\$4.30). The apparent increase of the donations when principals are responsible and the slight decrease of donations when agents are responsible are consistent with H2 predicting that –compared to a

morally neutral action— agents increase their use of firm resources to pay for a moral cause after an immoral action less when agents are responsible for an immoral action than when principals are responsible for the same immoral action.

Tests of Hypotheses

To test H1 and H2, I regress the dependent variable $DONATION_{FIRM}$ on the independent variables *Morality*, *Source of Responsibility* and the interaction thereof using heteroscedasticity-robust standard errors. *Morality* is a dummy variable equal to 0 when the prior action is morally neutral and equal to 1 when the prior action is immoral. *Source of Responsibility* is a dummy variable equal to 0 when principals are responsible for the prior action and equal to 1 when agents are responsible.

H1 predicts that —when principals are responsible— agents increase their use of firm resources to pay for a moral cause after an immoral action compared to a morally neutral action, which would be the simple effect of *Morality* when principals are responsible. Thus, it would be supported by a positive coefficient of *Morality*. H2 predicts that —compared to a morally neutral action— agents increase their use of firm resources to pay for a moral cause after an immoral action less when agents are responsible for an immoral action than when principals are responsible for the same immoral action. Thus, it would be supported by a negative coefficient of the interaction of *Morality* and *Source of Responsibility*. Table 2, Panel A, shows the results of the linear regression.

Table 2: Tests of Hypotheses

Panel A: Regression Results

Dependent Variable: DONATION_{FIRM}	Coefficient (p-value)
Constant	2.75 (.000)***
<i>Morality</i> (Neutral/Immoral)	1.15 (.047)**
<i>Source of Responsibility</i> (Principal/Agent)	1.55 (.027)**
<i>Morality*Source of Responsibility</i>	-1.70 (.047)**
N	94

Panel B: Simple Effects

Effect of <i>Morality</i> when principals are responsible	1.15 (.047)**
Effect of <i>Morality</i> when agents are responsible	-.55 (.455)

Notes: The dependent variable DONATION_{FIRM} is the amount granted by agents as a discount to a socially oriented initiative [scale from \$0 to \$9]. The independent variables are the two manipulated factors *Morality* (0: morally neutral vs. 1: immoral) and *Source of Responsibility* (0: principal vs. 1: agent).

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

Consistent with H1, the coefficient of *Morality* is positive and statistically significant ($\beta = 1.15$, $p < .05$, one-tailed). Consistent with H2, the coefficient of the interaction is negative and statistically significant ($\beta = -1.70$, $p < .05$, one-tailed). These results corroborate H1 and H2.

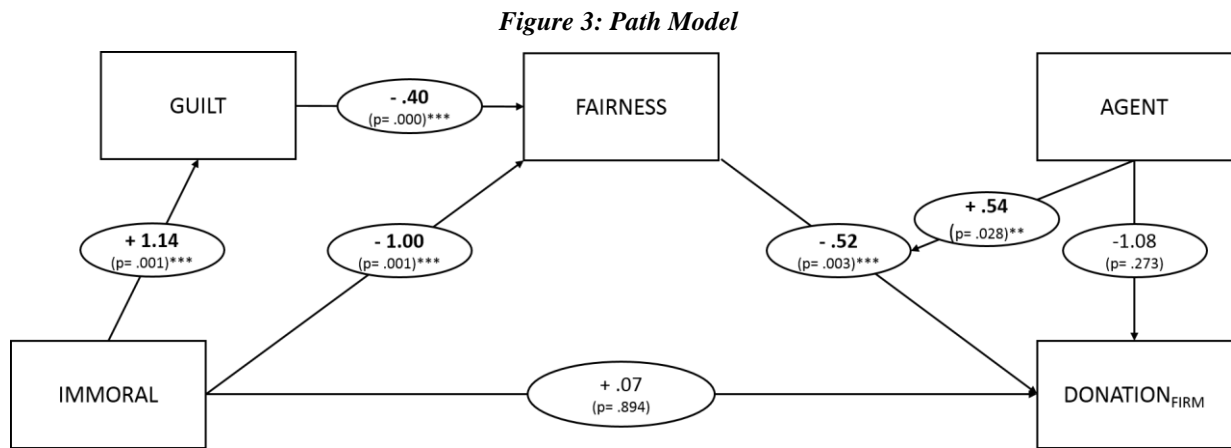
Finally, Table 2, Panel B, shows that agents do not seem to increase their use of firm resources at all to compensate for their own immoral decisions. The simple effect of *Morality* when agents are responsible for the immoral decision shows a negative sign, but is statistically not significant ($\beta = 1.15 - 1.70 = -.55$, $p = .46$, two-tailed).

Supplemental Analyses

Path Model

As explained above, my underlying theory predicts that immoral actions trigger feelings of guilt and unfairness. To relieve these feelings, agents can then be motivated to engage in moral cleansing activities. However, in the development of H2, I provide reasons why agents could refrain from using firm resources when they themselves are responsible for a prior immoral action. Thus, these fairness concerns might only have an effect on the agents' use of firm resources when principals are responsible for a prior immoral decision.

I test the underlying theoretical model with a system of equations that are estimated using Zellner's "seemingly unrelated regressions" (SUR) model (Zellner 1962; Greene 2012). The corresponding path model is depicted in Figure 3.



Notes: 94 agent participants passed the manipulation check question about who had made the decision to go to court and were included in the analysis. IMMORAL is equal to 1 when the prior action was immoral and 0 when it was morally neutral. AGENT is equal to 1 when agents are responsible and 0 when principals are responsible. GUILT (FAIRNESS) was elicited by referring to the decision to go to court and asking "How guilty did you feel?" ("From a moral perspective, how fair did you find the decision to go to court?") [scale from 0 to 6]. The dependent variable DONATION_{FIRM} is the amount granted by agents as a discount to a socially oriented initiative [scale from \$0 to \$9].

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

Results are consistent with the theory underlying H1 and H2. An immoral action decreases perceived fairness directly ($\beta = -1.00$, $p < .01$, one-tailed) and is partially mediated by feelings of guilt (effect of the immoral action on guilt: $\beta = 1.14$, $p < .01$, one-tailed; effect of guilt on

fairness: $\beta = -.40$, $p < .01$, one-tailed). This means that –regardless of the Source of Responsibility– agents experience guilt and fairness concerns when they profit financially from an immoral decision.¹⁰

However, only when principals are responsible for a prior immoral action –i.e. when AGENT is equal to 0– these fairness concerns trigger cleansing activities: the coefficient of the unmoderated path from FAIRNESS to DONATION_{FIRM} is statistically significant ($\beta = -.52$, $p = < .01$, one-tailed). The coefficient is negative because higher fairness concerns are measured as reduced assessments of fairness: lower (higher) fairness assessments imply higher (lower) fairness concerns and lead to higher (lower) firm donations. When agents are responsible for a prior immoral action –i.e. when AGENT is equal to 1– the effect from FAIRNESS on DONATION_{FIRM} is mitigated: this is indicated by the statistically significant positive interaction term ($\beta = .54$, $p = .03$, one-tailed). Hence, when agents are responsible for a prior immoral action, fairness concerns alone do not lead to moral cleansing activities ($\beta = -.52 + .54 = .02$, $p = .93$, two-tailed). The statistically not significant direct link between IMMORAL and DONATION_{FIRM} ($\beta = .07$, $p = .89$, two-tailed) suggests a full mediation.

Baseline Effect of Source of Responsibility for a Morally Neutral Decision

To examine and compare moral cleansing behavior by agents, two morally neutral conditions are needed as baselines in which either principals or agents are responsible. As the difference between these baseline conditions is irrelevant for the theory tested in this research study, a potential baseline effect of *Source of Responsibility* has been neglected so far. For reasons of completeness, a theoretical explanation and evidence on this difference are provided in this supplemental analysis.

The only difference between the two morally neutral conditions is the fact who is responsible for a morally neutral decision securing the firm profit. When principals are responsible for

¹⁰ In a more comprehensive model, I include AGENT and its corresponding interactions in the regressions explaining guilt and fairness considerations. However, there are no additional effects and inferences do not change: thus, I focus on the more parsimonious model in my analysis.

this decision, agents can interpret this as a benevolent act of principals suggesting gratefulness and reciprocal behavior (Fehr, Gächter, and Kirchsteiger 1997; Kuang and Moser 2009). Agents profit from the principals' decisions securing firm profits and the agents' salary, but do not have to make a decision or to bear any responsibility themselves. Hence, I expect agents to reciprocate the benevolent act when they are later given the opportunity to reduce their principals' wealth by granting a discount. I.e., lower firm donations can be expected when principals and not agents are responsible for a morally neutral decision.

Table 2, Panel A, shows that when agents are responsible for a morally neutral decision – i.e. when *Source of Responsibility* is equal to 0 – DONATION_{FIRM} is higher than when principals are responsible. This is indicated by a positive and statistically significant coefficient of *Source of Responsibility* ($\beta = 1.55$, $p < .03$, two-tailed). This is in line with my expectations.

Private Agent Donations

A central design feature of this experiment is that agents can use two kinds of resources to balance moral accounts: firm resources and private money. So far, I have focused on the former because, from an agency-perspective, only their use is relevant. Results so far suggest that agents do not use firm resources to cleanse a prior immoral action when they are responsible for it. As is argued in the development of H2, one reason for this might be that agents use their private money to balance moral accounts in this case. While this would be unproblematic from an agency-perspective, it would be interesting to know whether agents privately compensate for actions taken on the job and it would allow a better understanding of their reasoning.

If agents decided to use private money to cleanse their own immoral actions, I would expect higher private donations after an immoral action than after a morally neutral action. However, an untabulated t-test shows that this does not seem to be the case. DONATION_{PRIV} is \$2.30 after a morally neutral and \$1.75 after an immoral action when agents are responsible. While directionally contrary to my expectation, this difference is statistically not significant ($t = .86$, $p = .40$, two-tailed).

Thus, neither for firm resources nor for private money, I find evidence in support of the idea that agents increase their moral spending after an immoral action taken on the job. While this is not consistent with the argument that agents use private resources and match *Source of Responsibility* and source of resources, it is consistent with the argument that agents have various ways to disengage morally and to detach their moral identity from their decisions made on the job. An example from prior research can illustrate how behavior can change when individuals think about their professional decisions: Cohn et al. (2014) show that bank employees behave more dishonest when professional identity is rendered salient than when it is not rendered salient. Finally, the fact that agents do not seem to use private money to balance moral accounts increases the importance of an agency-perspective on agents' use of firm resources after immoral actions.

V. Conclusion

In this experimental research study, I examine whether agents use their principals' resources to compensate for prior immoral decisions by their firm and whether this is affected by who is responsible for this decision (principal vs. agent). I predict and find that *Source of Responsibility* plays an important moderating role for the question whether agents use firm resources to balance moral accounts. I find that compared to a morally neutral action, agents increase moral spending using firm resources when principals are responsible. However, agents do not increase the use of firm resources to pay for cleansing activities when they themselves are responsible for the same prior immoral action. Consistent with the underlying theory regarding the psychological process, I find that –regardless of *Source of Responsibility*– an immoral decision increases guilt and fairness concerns; however, only when principals are responsible, increased fairness concerns lead to an increase of balancing moral actions. Thus, when agents are responsible, fairness concerns are not sufficient to trigger balancing actions. Finally, I find that agents do not seem to use private money to cleanse their own immoral action when they have the opportunity to use firm resources. This is consistent with agents disengaging morally

from their job and it underlines the importance of examining the issue of agency costs due to moral accounting.

I conjecture that my experimental setting constitutes a conservative test of my theory because principals are very salient as individuals losing money. Outside of the laboratory, the effect might be strong as agents are often dealing with a potentially large number of anonymous principals, which could diffuse the perceived impact of agents' decisions on principals' wealth.

This study makes several important contributions and complements recent accounting studies on moral balancing and consistency (Millar 2016; Johnson et al. 2017). Most importantly, I identify a new form of agency costs resulting from interdependencies of decisions with moral connotations due to other-regarding preferences by agents. This study's results suggest that moral accounting can cause agency costs because agents in hierarchies confronted with immoral actions by principals may want to engage in moral cleansing activities costly to the firm. Hence, immoral actions to increase firm profits might be (partially) offset by agents' decisions to pay for moral cleansing activities using firm resources and firms might be well advised to consider these consequences from financially profitable, but immoral decision. These findings might be particularly important for the design of control systems in certain industries, job functions or in firms with strong hierarchies and offer a new perspective on agency conflicts that can be used by for future research studies.

For example, this study's results suggest that agents with a high moral sensitivity might be particularly active in balancing moral accounts thereby reducing firm profits. This could be particularly interesting because it shows a potential downside of hiring agents with a high moral sensitivity. While hiring them may sometimes result in lower agency costs –e.g. lower control costs because of agents' honesty or trustworthiness (Evans et al. 2001; Beccera and Gupta 1999)– it may increase agency costs due to their desire to balance moral accounts. Thus, it could be interesting to extend this research study by analyzing potential moderating effect of certain personality characteristics or to tasks requiring certain character traits. Further, while I argue

that results from my research study generalize to all hierarchical principal-agent-relations with principals' as residual claimants, this assumption might be tested directly by analyzing whether there exist differences in the perception of immoral actions due to decisions by firm owners, other forms of principals, or collectives. In addition, it might be interesting to analyze moral balancing when a different party, e.g. consultants, is involved in, but not fully responsible for an immoral decision because responsibility could (partially) be shifted. Note that different from other research I propose to focus on agents' reactions to principal's decisions (Hamman et al. 2010; Bartling and Fischbacher 2012).

This study further contributes to literature on CSR and possible agency problems. It underlines the importance for firms to consider agents' moral preferences when designing managerial control systems as agents might use the moral connotation of CSR activities to manage moral accounts with firm resources (Merritt et al. 2012; Gneezy et al. 2014; Cascio and Plant 2015; Effron and Conway 2015). Moreover, as CSR activities frequently include uncertainty about expected financial benefits (Moser and Martin 2012; Martin and Moser 2016), it can be particularly hard to differentiate between agents' motivations and to design adequate control systems. On the other hand, I conjecture that these moral aspects of CSR (including but not limited to corporate giving) could be a tool to curtail the problem of these agency costs as firms might use it to signal to agents that a firm balances moral accounts on a firm level. Thus, firms might use moral expenditures for internal impression management: spending resources in a calculated and targeted way to conserve or proactively create a moral image and reputation might be an investment to prevent agents from seeking uncontrolled actions or to license them to make immoral decisions in their firms' interest. Possibly, this rational might also explain some entrepreneurs' visible endeavors to support charities. Empirically testing the conjecture whether proactively creating a moral image, e.g., by investing in CSR or donating, can actually prevent agents from engaging in uncontrolled moral cleansing activities might be another interesting and important extension of this research study.

From a theoretical perspective, this study adds to research on moral balancing by testing its practical reach and implications in an important corporate setting, a principal-agent-relationship. Specifically, I extend prior research by adding the possibility for individuals to use resources not belonging to themselves (i.e. firm resources) and an additional source of responsibility (i.e. the residual claimant of the financial profits generated by the immoral action). Finally, agents have another moral rationale to invoke as their job entails the duty to make decisions that are in their firm's interest: this makes the moral trade-off more complex and offers agents the possibility to disengage morally.

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Appendix

Experiment Materials

[Instructions: CEO participants]

General Instructions

Thank you for participating in our study. All interactions in the lab will take place anonymously over a computer network. Your individual responses will be kept confidential and will be analyzed anonymously. Also, when paired with another participant, the identities will remain unknown to the two partners.

Please write now your names on the Post-it notes on your desk. We only need them for the payment procedure and will destroy them immediately after you have been paid. We promise to carry out this study in the manner described in the instructions, with no deception of any form.

Since your payment depends on your decisions, it is important that you read the instructions and the materials very carefully. Also, the success of this scientific study depends on you taking the imaginary role-play situation seriously and making deliberate and conscientious decisions. This role-play situation will be described in detail on the following two pages before you are asked to make your decisions. It is important for the study that you read the description carefully and that you imagine the situation in a vivid way.

If you have any questions during the study, please raise your hand and we will answer your questions in private. Please do not talk with anyone other than the administrator after this point. Also, please help us maintain control over this study by not discussing it with anyone who may be participating in future sessions.

Today's session will take probably less than 45 minutes.

We are now going to collect the Post-it notes before we continue with the instructions.

Study Setting

This study involves decision-making in a profit-oriented company. It will last **one period only** and involves the **CEO** and the **owner** of a company. In this study, there is no training period: so, it is important that you stay focused from the start.

You are assigned the role of the **CEO**.

Another participant in this room is assigned the role of the company's owner.

Again, please imagine you being in this role as realistically and intensely as possible.

Now imagine the following setting: The company is a construction company offering a broad spectrum of services. It has been in the business for 25 years. The CEO was hired by the sole owner of the company to run the business operations. The owner is the residual claimant of the profit generated by the company. This means that the remaining profit after expenditures goes to the owner. The operative decisions made during the study will influence the company's profit. Furthermore, there exists information asymmetry between CEO and owner: this means that the owner does not know all CEO decisions and their results.

Payment

In this study, the usual **show-up fee** of \$7 will be **integrated in the case scenario**. The additional earnings beyond the show-up fee will be paid based upon your decisions and the decisions of others in the experiment. Note that throughout the study the term "personal earnings" refers to the amount that would be paid to a participant **including** the show-up fee. **All decisions are relevant** and will be used to calculate your personal earnings for participating in the study.

Please click the "continue" button when you are ready to start the study.

Continue

[Immoral decision by CEO: manipulation screen for CEO participants]

Imagine the following situation as detailed and vivid as possible.

The last project you managed for your company was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the owner that they have found a loophole (a formal error) in the contract. This loophole provides the opportunity to nullify the liability clauses. Exploiting it would involve some ruthless legal maneuvering and can only be successful because your company can afford more expensive and better lawyers than the community's administration. As a consequence, **exploiting this loophole would make it highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is fully responsible for the delay, you are considering all available options. After intense deliberation, you decide to go to court. The court agrees with your company's arguments regarding the loophole: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. The owner is also informed about this outcome. Because of the strategic importance and size of this project and to additionally motivate you, it had been agreed as part of your bonus scheme that you would receive a one-time bonus payment for this project in addition to your fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and your personal bonus is \$9. Thus, your current personal earnings from this study are $\$11 + \$9 = \$20$.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project** and an operative decision you will have to make regarding this additional project. **Additionally**, just like in the real world, the final company profit can be **influenced by good or bad luck**. While the owner knows about the outcome of the community college construction project and the court's decision, s/he will not learn any details about the additional operative decision you will make. This means, that the owner will never be able to disentangle the consequences of your upcoming decision from the effect of good or bad luck on the final company profit. Specifically, a randomly determined whole number between -2 and +2 will be added to the company profit after you have made your decision regarding the additional project. The owner will only learn and receive the final outcome (as resulting from both the consequences of your decision and the randomly determined number).

Continue

[Immoral decision by CEO: decision screen for CEO participants (discount question first)]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of your decision to exploit the loophole and to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations and discounts by companies involved. The extent of the renovation project, its quality and success increase with the resources invested in the project. The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project and whether **your company would support the initiative's project by granting a discount for the project you have been commissioned for**: for example, your company could provide materials for very low prices, charge reduced rates for workers, or lend tools and machines for free or for strongly reduced fees. They also inform you that other representatives are asking the owner of the company to support their project with a personal donation. Now, you have to make two decisions:

1.) Company support: To support the initiative in accomplishing its goals with the renovation project, **as a CEO you can grant discounts on behalf of your company.** You know that without any discounts, the renovation works for this initiative would result in a certain profit of \$9 for your company. Any costs the initiative saves on these basic renovations would be spent on the extended renovation plans. However, your company could not be commissioned for these because it does not offer the relevant services. Therefore, should you decide to grant discounts to support this good cause, this would reduce your company's revenue and profit.

2.) Personal support: To support the initiative in accomplishing its goals with the renovation project, you can **make a personal donation.** The more you donate, the costlier it is for you, but the better it is for the initiative's project.

Because you as CEO are in charge of the daily operative decisions, **the owner will not be informed about the decisions you make** and has only the following information:

- The owner knows that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that you as CEO received a one-time bonus payment of \$9 in addition to your fixed wage of \$11. This resulted in a profit of \$11 for your company.
- The owner also knows that the initial construction project (the community college) is not the only project of the company in this business period.
- Furthermore, the owner knows that you are being asked for a **personal donation** just like you know that s/he is being asked for one as well. However, the owner will not learn the amount you donate to the initiative's renovation project from your personal earnings.
- In contrast, the owner does **not know** that you have been asked for discounts. Also, s/he is **not informed** about the potential profit of the initiative's renovation project before discounts. Therefore, **the owner will not receive any information about your decision whether to grant a discount on behalf of your company.**
- Finally, the owner knows that good or bad luck can also influence the final company profit. After all, s/he expects the **overall final company profit** of this business period to be somewhere between \$9 and \$22.

Because this project is strategically less important and smaller than the initial construction project (the community college), your personal compensation is not tied in any way to the outcome of this renovation project (the community center). This means that **the discount you decide to grant as company support will only reduce the company profit that will be distributed to the owner, but not your personal earnings.**

Please imagine the situation as detailed and vivid as possible and answer the two following questions. Additionally, please read the explanations to the questions carefully.

[The "continue" button will only appear after you have made your decisions.]

1.) Company support: How much discount are you willing to grant to the initiative's renovation project on behalf of your company?

You can grant a discount in the value of up to \$9 **on behalf of your company** to support this good cause.

Note: As explained above, any discount granted will reduce the company profit. We will **actually** deduct the amount you indicate from the potential profit of \$9 for the renovation project and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce the company profit** and will be donated to this charity. For example: if you grant no discount at all, the final company profit will be \$20 +/- the effect of good or bad luck; if you grant the maximum discount possible, the final company profit will be \$11 +/- the effect of good or bad luck. Recall that the owner will only be informed about the final company profit at the end of the business period. **The owner neither knows about the nature of your operative decision nor can s/he disentangle the consequences of your decision on the company profit from the effect of good or bad luck.**

Please indicate how much **discount** you are willing to **grant** to the initiative's renovation project on behalf of your company? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

2.) Personal support: How much are you willing to donate personally to the initiative's renovation project?

Your current personal earnings are \$20 (\$11 fixed wage plus \$9 bonus payment for the initial project). You can now donate up to \$9 **from your personal earnings** to support this good cause.

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate personally** to the initiative's renovation project? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

[Immoral decision by owner: manipulation screen for CEO participants]

Imagine the following situation as detailed and vivid as possible.

The last project you managed for your company was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the owner that they have found a loophole (a formal error) in the contract. This loophole provides the opportunity to nullify the liability clauses. Exploiting it would involve some ruthless legal maneuvering and can only be successful because your company can afford more expensive and better lawyers than the community's administration. As a consequence, **exploiting this loophole would make it highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is fully responsible for the delay, the owner is considering all available options. After intense deliberation, the owner decides to go to court. The court agrees with your company's arguments regarding the loophole: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. The owner is also informed about this outcome. Because of the strategic importance and size of this project and to additionally motivate you, it had been agreed as part of your bonus scheme that you would receive a one-time bonus payment for this project in addition to your fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and your personal bonus is \$9. Thus, your current personal earnings from this study are $\$11 + \$9 = \$20$.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project** and an operative decision you will have to make regarding this additional project. **Additionally,** just like in the real world, the final company profit can be **influenced by good or bad luck**. While the owner knows about the outcome of the community college construction project and the court's decision, s/he will not learn any details about the additional operative decision you will make. This means, that the owner will never be able to disentangle the consequences of your upcoming decision from the effect of good or bad luck on the final company profit. Specifically, a randomly determined whole number between -2 and +2 will be added to the company profit after you have made your decision regarding the additional project. The owner will only learn and receive the final outcome (as resulting from both the consequences of your decision and the randomly determined number).

Continue

[Immoral decision by owner: decision screen for CEO participants (discount question first)]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of the decision made by the owner to exploit the loophole and to argue in court against the liability demands by the community's administration.**

Now, your company is **commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations and discounts by companies involved. The extent of the renovation project, its quality and success increase with the resources invested in the project. The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project and whether **your company would support the initiative's project by granting a discount for the project you have been commissioned for**: for example, your company could provide materials for very low prices, charge reduced rates for workers, or lend tools and machines for free or for strongly reduced fees. They also inform you that other representatives are asking the owner of the company to support their project with a personal donation. Now, you have to make two decisions:

1.) Company support: To support the initiative in accomplishing its goals with the renovation project, **as a CEO you can grant discounts on behalf of your company**. You know that without any discounts, the renovation works for this initiative would result in a certain profit of \$9 for your company. Any costs the initiative saves on these basic renovations would be spent on the extended renovation plans. However, your company could not be commissioned for these because it does not offer the relevant services. Therefore, should you decide to grant discounts to support this good cause, this would reduce your company's revenue and profit.

2.) Personal support: To support the initiative in accomplishing its goals with the renovation project, you can **make a personal donation**. The more you donate, the costlier it is for you, but the better it is for the initiative's project.

Because you as CEO are in charge of the daily operative decisions, **the owner will not be informed about the decisions you make** and has only the following information:

- The owner knows that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that you as CEO received a one-time bonus payment of \$9 in addition to your fixed wage of \$11. This resulted in a profit of \$11 for your company.
- The owner also knows that the initial construction project (the community college) is not the only project of the company in this business period.
- Furthermore, the owner knows that you are being asked for a **personal donation** just like you know that s/he is being asked for one as well. However, the owner will not learn the amount you donate to the initiative's renovation project from your personal earnings.
- In contrast, the owner does **not know** that you have been asked for discounts. Also, s/he is **not informed** about the potential profit of the initiative's renovation project before discounts. Therefore, **the owner will not receive any information about your decision whether to grant a discount on behalf of your company.**
- Finally, the owner knows that good or bad luck can also influence the final company profit. After all, s/he expects the **overall final company profit** of this business period to be somewhere between \$9 and \$22.

Because this project is strategically less important and smaller than the initial construction project (the community college), your personal compensation is not tied in any way to the outcome of this renovation project (the community center). This means that **the discount you decide to grant as company support will only reduce the company profit that will be distributed to the owner, but not your personal earnings.**

Please imagine the situation as detailed and vivid as possible and answer the two following questions. Additionally, please read the explanations to the questions carefully.

[The "continue" button will only appear after you have made your decisions.]

1.) Company support: How much discount are you willing to grant to the initiative's renovation project on behalf of your company?

You can grant a discount in the value of up to \$9 **on behalf of your company** to support this good cause.

Note: As explained above, any discount granted will reduce the company profit. We will **actually** deduct the amount you indicate from the potential profit of \$9 for the renovation project and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce the company profit** and will be donated to this charity. For example: if you grant no discount at all, the final company profit will be \$20 +/- the effect of good or bad luck; if you grant the maximum discount possible, the final company profit will be \$11 +/- the effect of good or bad luck. Recall that the owner will only be informed about the final company profit at the end of the business period. **The owner neither knows about the nature of your operative decision nor can s/he disentangle the consequences of your decision on the company profit from the effect of good or bad luck.**

Please indicate how much **discount** you are willing to **grant** to the initiative's renovation project on behalf of your company? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

2.) Personal support: How much are you willing to donate personally to the initiative's renovation project?

Your current personal earnings are \$20 (\$11 fixed wage plus \$9 bonus payment for the initial project). You can now donate up to \$9 **from your personal earnings** to support this good cause.

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate personally** to the initiative's renovation project? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

[Morally neutral decision by CEO: manipulation screen for CEO participants]

Imagine the following situation as detailed and vivid as possible.

The last project you managed for your company was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was not your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the owner **that it would be highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is not responsible for the delay, you are considering all available options. After intense deliberation, you decide to go to court. The court agrees with your company's arguments: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. The owner is also informed about this outcome. Because of the strategic importance and size of this project and to additionally motivate you, it had been agreed as part of your bonus scheme that you would receive a one-time bonus payment for this project in addition to your fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and your personal bonus is \$9. Thus, your current personal earnings from this study are $\$11 + \$9 = \$20$.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project** and an operative decision you will have to make regarding this additional project. **Additionally,** just like in the real world, the final company profit can be **influenced by good or bad luck.** While the owner knows about the outcome of the community college construction project and the court's decision, s/he will not learn any details about the additional operative decision you will make. This means, that the owner will never be able to disentangle the consequences of your upcoming decision from the effect of good or bad luck on the final company profit. Specifically, a randomly determined whole number between -2 and +2 will be added to the company profit after you have made your decision regarding the additional project. The owner will only learn and receive the final outcome (as resulting from both the consequences of your decision and the randomly determined number).

Continue

[Morally neutral decision by CEO: decision screen for CEO participants (discount question first)]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of your decision to argue in court against the liability demands by the community's administration**.

Now, your company is **commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations and discounts by companies involved. The extent of the renovation project, its quality and success increase with the resources invested in the project. The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project and whether **your company would support the initiative's project by granting a discount for the project you have been commissioned for**; for example, your company could provide materials for very low prices, charge reduced rates for workers, or lend tools and machines for free or for strongly reduced fees. They also inform you that other representatives are asking the owner of the company to support their project with a personal donation. Now, you have to make two decisions:

1.) Company support: To support the initiative in accomplishing its goals with the renovation project, **as a CEO you can grant discounts on behalf of your company**. You know that without any discounts, the renovation works for this initiative would result in a certain profit of \$9 for your company. Any costs the initiative saves on these basic renovations would be spent on the extended renovation plans. However, your company could not be commissioned for these because it does not offer the relevant services. Therefore, should you decide to grant discounts to support this good cause, this would reduce your company's revenue and profit.

2.) Personal support: To support the initiative in accomplishing its goals with the renovation project, you can **make a personal donation**. The more you donate, the costlier it is for you, but the better it is for the initiative's project.

Because you as CEO are in charge of the daily operative decisions, **the owner will not be informed about the decisions you make** and has only the following information:

- The owner knows that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that you as CEO received a one-time bonus payment of \$9 in addition to your fixed wage of \$11. This resulted in a profit of \$11 for your company.
- The owner also knows that the initial construction project (the community college) is not the only project of the company in this business period.
- Furthermore, the owner knows that you are being asked for a **personal donation** just like you know that s/he is being asked for one as well. However, the owner will not learn the amount you donate to the initiative's renovation project from your personal earnings.
- In contrast, the owner does **not know** that you have been asked for discounts. Also, s/he is **not informed** about the potential profit of the initiative's renovation project before discounts. Therefore, **the owner will not receive any information about your decision whether to grant a discount on behalf of your company**.
- Finally, the owner knows that good or bad luck can also influence the final company profit. After all, s/he expects the **overall final company profit** of this business period to be somewhere between \$9 and \$22.

Because this project is strategically less important and smaller than the initial construction project (the community college), your personal compensation is not tied in any way to the outcome of this renovation project (the community center). This means that **the discount you decide to grant as company support will only reduce the company profit that will be distributed to the owner, but not your personal earnings**.

Please imagine the situation as detailed and vivid as possible and answer the two following questions. Additionally, please read the explanations to the questions carefully.

[The "continue" button will only appear after you have made your decisions.]

1.) Company support: How much discount are you willing to grant to the initiative's renovation project on behalf of your company?

You can grant a discount in the value of up to \$9 **on behalf of your company** to support this good cause.

Note: As explained above, any discount granted will reduce the company profit. We will **actually** deduct the amount you indicate from the potential profit of \$9 for the renovation project and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce the company profit** and will be donated to this charity. For example: if you grant no discount at all, the final company profit will be \$20 +/- the effect of good or bad luck; if you grant the maximum discount possible, the final company profit will be \$11 +/- the effect of good or bad luck. Recall that the owner will only be informed about the final company profit at the end of the business period. **The owner neither knows about the nature of your operative decision nor can s/he disentangle the consequences of your decision on the company profit from the effect of good or bad luck.**

Please indicate how much **discount** you are willing to **grant** to the initiative's renovation project on behalf of your company? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

2.) Personal support: How much are you willing to donate personally to the initiative's renovation project?

Your current personal earnings are \$20 (\$11 fixed wage plus \$9 bonus payment for the initial project). You can now donate up to \$9 **from your personal earnings** to support this good cause.

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate personally** to the initiative's renovation project? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

[Morally neutral decision by owner: manipulation screen for CEO participants]

Imagine the following situation as detailed and vivid as possible.

The last project you managed for your company was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was not your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the owner **that it would be highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is not responsible for the delay, the owner is considering all available options. After intense deliberation, the owner decides to go to court. The court agrees with your company's arguments: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. The owner is also informed about this outcome. Because of the strategic importance and size of this project and to additionally motivate you, it had been agreed as part of your bonus scheme that you would receive a one-time bonus payment for this project in addition to your fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and your personal bonus is \$9. Thus, your current personal earnings from this study are $\$11 + \$9 = \$20$.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project** and an operative decision you will have to make regarding this additional project. **Additionally**, just like in the real world, the final company profit can be **influenced by good or bad luck**. While the owner knows about the outcome of the community college construction project and the court's decision, s/he will not learn any details about the additional operative decision you will make. This means, that the owner will never be able to disentangle the consequences of your upcoming decision from the effect of good or bad luck on the final company profit. Specifically, a randomly determined whole number between -2 and +2 will be added to the company profit after you have made your decision regarding the additional project. The owner will only learn and receive the final outcome (as resulting from both the consequences of your decision and the randomly determined number).

Continue

[Morally neutral decision by owner: decision screen for CEO participants (discount question first)]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of the decision made by the owner to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations and discounts by companies involved. The extent of the renovation project, its quality and success increase with the resources invested in the project. The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project and whether **your company would support the initiative's project by granting a discount for the project you have been commissioned for**; for example, your company could provide materials for very low prices, charge reduced rates for workers, or lend tools and machines for free or for strongly reduced fees. They also inform you that other representatives are asking the owner of the company to support their project with a personal donation. Now, you have to make two decisions:

1.) Company support: To support the initiative in accomplishing its goals with the renovation project, **as a CEO you can grant discounts on behalf of your company.** You know that without any discounts, the renovation works for this initiative would result in a certain profit of \$9 for your company. Any costs the initiative saves on these basic renovations would be spent on the extended renovation plans. However, your company could not be commissioned for these because it does not offer the relevant services. Therefore, should you decide to grant discounts to support this good cause, this would reduce your company's revenue and profit.

2.) Personal support: To support the initiative in accomplishing its goals with the renovation project, you can **make a personal donation.** The more you donate, the costlier it is for you, but the better it is for the initiative's project.

Because you as CEO are in charge of the daily operative decisions, **the owner will not be informed about the decisions you make** and has only the following information:

- The owner knows that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that you as CEO received a one-time bonus payment of \$9 in addition to your fixed wage of \$11. This resulted in a profit of \$11 for your company.
- The owner also knows that the initial construction project (the community college) is not the only project of the company in this business period.
- Furthermore, the owner knows that you are being asked for a **personal donation** just like you know that s/he is being asked for one as well. However, the owner will not learn the amount you donate to the initiative's renovation project from your personal earnings.
- In contrast, the owner does **not know** that you have been asked for discounts. Also, s/he is **not informed** about the potential profit of the initiative's renovation project before discounts. Therefore, **the owner will not receive any information about your decision whether to grant a discount on behalf of your company.**
- Finally, the owner knows that good or bad luck can also influence the final company profit. After all, s/he expects the **overall final company profit** of this business period to be somewhere between \$9 and \$22.

Because this project is strategically less important and smaller than the initial construction project (the community college), your personal compensation is not tied in any way to the outcome of this renovation project (the community center). This means that **the discount you decide to grant as company support will only reduce the company profit that will be distributed to the owner, but not your personal earnings.**

Please imagine the situation as detailed and vivid as possible and answer the two following questions. Additionally, please read the explanations to the questions carefully.

[The "continue" button will only appear after you have made your decisions.]

1.) Company support: How much discount are you willing to grant to the initiative's renovation project on behalf of your company?

You can grant a discount in the value of up to \$9 **on behalf of your company** to support this good cause.

Note: As explained above, any discount granted will reduce the company profit. We will **actually** deduct the amount you indicate from the potential profit of \$9 for the renovation project and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce the company profit** and will be donated to this charity. For example: if you grant no discount at all, the final company profit will be \$20 +/- the effect of good or bad luck; if you grant the maximum discount possible, the final company profit will be \$11 +/- the effect of good or bad luck. Recall that the owner will only be informed about the final company profit at the end of the business period. **The owner neither knows about the nature of your operative decision nor can s/he disentangle the consequences of your decision on the company profit from the effect of good or bad luck.**

Please indicate how much **discount** you are willing to **grant** to the initiative's renovation project on behalf of your company? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

2.) Personal support: How much are you willing to donate personally to the initiative's renovation project?

Your current personal earnings are \$20 (\$11 fixed wage plus \$9 bonus payment for the initial project). You can now donate up to \$9 **from your personal earnings** to support this good cause.

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate personally** to the initiative's renovation project? [in \$]

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

[Instructions: owner participants]

General Instructions

Thank you for participating in our study. All interactions in the lab will take place anonymously over a computer network. Your individual responses will be kept confidential and will be analyzed anonymously. Also, when paired with another participant, the identities will remain unknown to the two partners.

Please write now your names on the Post-it notes on your desk. We only need them for the payment procedure and will destroy them immediately after you have been paid. We promise to carry out this study in the manner described in the instructions, with no deception of any form.

Since your payment depends on your decisions, it is important that you read the instructions and the materials very carefully. Also, the success of this scientific study depends on you taking the imaginary role-play situation seriously and making deliberate and conscientious decisions. This role-play situation will be described in detail on the following two pages before you are asked to make your decisions. It is important for the study that you read the description carefully and that you imagine the situation in a vivid way.

If you have any questions during the study, please raise your hand and we will answer your questions in private. Please do not talk with anyone other than the administrator after this point. Also, please help us maintain control over this study by not discussing it with anyone who may be participating in future sessions.

Today's session will take probably less than 45 minutes.

We are now going to collect the Post-it notes before we continue with the instructions.

Study Setting

This study involves decision-making in a profit-oriented company. It will last **one period only** and involves the **CEO** and the **owner** of a company. In this study, there is no training period: so, it is important that you stay focused from the start.

You are assigned the role of the **owner**.

Another participant in this room is assigned the role of the company's CEO.

Again, please imagine you being in this role as realistically and intensely as possible.

Now imagine the following setting: The company is a construction company offering a broad spectrum of services. It has been in the business for 25 years. The CEO was hired by the sole owner of the company to run the business operations. The owner is the residual claimant of the profit generated by the company. This means that the remaining profit after expenditures goes to the owner. The operative decisions made during the study will influence the company's profit. Furthermore, there exists information asymmetry between CEO and owner: this means that the owner does not know all CEO decisions and their results.

Payment

In this study, the usual **show-up fee** of \$7 will be **integrated in the case scenario**. The additional earnings beyond the show-up fee will be paid based upon your decisions and the decisions of others in the experiment. Note that throughout the study the term "personal earnings" refers to the amount that would be paid to a participant **including** the show-up fee. **All decisions are relevant** and will be used to calculate your personal earnings for participating in the study.

Please click the "continue" button when you are ready to start the study.

Continue

[Immoral decision by CEO: manipulation screen for owner participants]

Imagine the following situation as detailed and vivid as possible.

Your company's last project was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the CEO that they have found a loophole (a formal error) in the contract. This loophole provides the opportunity to nullify the liability clauses. Exploiting it would involve some ruthless legal maneuvering and can only be successful because your company can afford more expensive and better lawyers than the community's administration. As a consequence, **exploiting this loophole would make it highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is fully responsible for the delay, the CEO is considering all available options. After intense deliberation, the CEO decides to go to court. The court agrees with your company's arguments regarding the loophole: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. Because of the strategic importance and size of this project and to additionally motivate the CEO, it had been agreed as part of her/his bonus scheme that s/he would receive a one-time bonus payment for this project in addition to her/his fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and the CEO's personal bonus is \$9.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project. Additionally,** just like in the real world, the final company profit can be **influenced by good or bad luck.** Specifically, a randomly determined whole number between -2 and +2 will be added to the project profits. At the end of the study you will receive the final company profit of this period as your personal earnings from this study.

Continue

[Immoral decision by CEO: decision screen for owner participants]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of the decision made by the CEO to exploit the loophole and to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations. The extent of the renovation project, its quality and success increase with the resources invested in the project: The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project. The more you donate, the costlier it is for you, but the better it is for the initiative's project. They also inform you that other representatives are asking the CEO of your company to support their project with a personal donation.

Depending on the available profit generated by your company in this business period, how much are you willing to donate to the initiative's renovation project?

As explained above, you will receive the final company profit at the end of the business period. From this, you can make a donation to support the initiative's renovation project. So far, you know that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that your CEO received a one-time bonus payment of \$9 in addition to her/his fixed wage of \$11. Therefore, that initial project resulted in a profit of \$11 for your company. However, the business period did not stop at this point and the initial construction project is not the only project of your company. The final company profit at the end of the period is influenced by the CEO's additional operative decision(s) as well as good or bad luck. As in real life, daily operative decisions are the CEO's responsibility and you will not be able to disentangle the effect of her/his operative decision(s) from the effect of good or bad luck.

We will inform you about the exact amount of the final company profit at the end of the study. For now, you only know that it will be between \$9 and \$22. Therefore, we ask you to indicate the amount that you want to donate depending on the final company profit. Please indicate in the following table **in the bottom row** the amounts you are willing to donate **from your personal earnings** for each of the possible cases of the final company profit. The bold numbers show the possible final company profits of this business period: to guarantee your show-up fee you are not allowed to donate an amount larger than the difference between the company profit and \$7. For example: in case of a company profit of \$9, your maximum donation can be \$2; in case of a company profit of \$22, your maximum donation can be \$15.

Please imagine the situation as detailed and vivid as possible and answer the following question. Please read the explanation to the question carefully.

[Please complete all the cells and confirm your decisions by clicking the "continue" button.]

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate** to the initiative's renovation project for each of the possible final company profits.

Company profit [in \$]:	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Your donation [in \$]:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Continue

[Immoral decision by owner: manipulation screen for owner participants]

Imagine the following situation as detailed and vivid as possible.

Your company's last project was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the CEO that they have found a loophole (a formal error) in the contract. This loophole provides the opportunity to nullify the liability clauses. Exploiting it would involve some ruthless legal maneuvering and can only be successful because your company can afford more expensive and better lawyers than the community's administration. As a consequence, **exploiting this loophole would make it highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is fully responsible for the delay, you are considering all available options. After intense deliberation, you decide to go to court. The court agrees with your company's arguments regarding the loophole: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. Because of the strategic importance and size of this project and to additionally motivate the CEO, it had been agreed as part of her/his bonus scheme that s/he would receive a one-time bonus payment for this project in addition to her/his fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and the CEO's personal bonus is \$9.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project. Additionally**, just like in the real world, the final company profit can be **influenced by good or bad luck**. Specifically, a randomly determined whole number between -2 and +2 will be added to the project profits. At the end of the study you will receive the final company profit of this period as your personal earnings from this study.

Continue

[Immoral decision by owner: decision screen for owner participants]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of your decision to exploit the loophole and to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations. The extent of the renovation project, its quality and success increase with the resources invested in the project: The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project. The more you donate, the costlier it is for you, but the better it is for the initiative's project. They also inform you that other representatives are asking the CEO of your company to support their project with a personal donation.

Depending on the available profit generated by your company in this business period, how much are you willing to donate to the initiative's renovation project?

As explained above, you will receive the final company profit at the end of the business period. From this, you can make a donation to support the initiative's renovation project. So far, you know that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that your CEO received a one-time bonus payment of \$9 in addition to her/his fixed wage of \$11. Therefore, that initial project resulted in a profit of \$11 for your company. However, the business period did not stop at this point and the initial construction project is not the only project of your company. The final company profit at the end of the period is influenced by the CEOs additional operative decision(s) as well as good or bad luck. As in real life, daily operative decisions are the CEO's responsibility and you will not be able to disentangle the effect of her/his operative decision(s) from the effect of good or bad luck.

We will inform you about the exact amount of the final company profit at the end of the study. For now, you only know that it will be between \$9 and \$22. Therefore, we ask you to indicate the amount that you want to donate depending on the final company profit. Please indicate in the following table **in the bottom row** the amounts you are willing to donate **from your personal earnings** for each of the possible cases of the final company profit. The bold numbers show the possible final company profits of this business period: to guarantee your show-up fee you are not allowed to donate an amount larger than the difference between the company profit and \$7. For example: in case of a company profit of \$9, your maximum donation can be \$2; in case of a company profit of \$22, your maximum donation can be \$15.

Please imagine the situation as detailed and vivid as possible and answer the following question. Please read the explanation to the question carefully.

[Please complete all the cells and confirm your decisions by clicking the "continue" button.]

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate** to the initiative's renovation project for each of the possible final company profits.

Company profit [in \$]:	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Your donation [in \$]:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Continue

[Morally neutral decision by CEO: manipulation screen for owner participants]

Imagine the following situation as **detailed and vivid** as possible.

Your company's last project was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was not your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the CEO **that it would be highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is not responsible for the delay, the CEO is considering all available options. After intense deliberation, the CEO decides to go to court. The court agrees with your company's arguments: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. Because of the strategic importance and size of this project and to additionally motivate the CEO, it had been agreed as part of her/his bonus scheme that s/he would receive a one-time bonus payment for this project in addition to her/his fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and the CEO's personal bonus is \$9.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project. Additionally,** just like in the real world, the final company profit can be **influenced by good or bad luck.** Specifically, a randomly determined whole number between -2 and +2 will be added to the project profits. At the end of the study you will receive the final company profit of this period as your personal earnings from this study.

Continue

[Morally neutral decision by CEO: decision screen for owner participants]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of the decision made by the CEO to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations. The extent of the renovation project, its quality and success increase with the resources invested in the project: The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project. The more you donate, the costlier it is for you, but the better it is for the initiative's project. They also inform you that other representatives are asking the CEO of your company to support their project with a personal donation.

Depending on the available profit generated by your company in this business period, how much are you willing to donate to the initiative's renovation project?

As explained above, you will receive the final company profit at the end of the business period. From this, you can make a donation to support the initiative's renovation project. So far, you know that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that your CEO received a one-time bonus payment of \$9 in addition to her/his fixed wage of \$11. Therefore, that initial project resulted in a profit of \$11 for your company. However, the business period did not stop at this point and the initial construction project is not the only project of your company. The final company profit at the end of the period is influenced by the CEO's additional operative decision(s) as well as good or bad luck. As in real life, daily operative decisions are the CEO's responsibility and you will not be able to disentangle the effect of her/his operative decision(s) from the effect of good or bad luck.

We will inform you about the exact amount of the final company profit at the end of the study. For now, you only know that it will be between \$9 and \$22. Therefore, we ask you to indicate the amount that you want to donate depending on the final company profit. Please indicate in the following table **in the bottom row** the amounts you are willing to donate **from your personal earnings** for each of the possible cases of the final company profit. The bold numbers show the possible final company profits of this business period: to guarantee your show-up fee you are not allowed to donate an amount larger than the difference between the company profit and \$7. For example: in case of a company profit of \$9, your maximum donation can be \$2; in case of a company profit of \$22, your maximum donation can be \$15.

Please imagine the situation as detailed and vivid as possible and answer the following question. Please read the explanation to the question carefully.
[Please complete all the cells and confirm your decisions by clicking the "continue" button.]

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate** to the initiative's renovation project for each of the possible final company profits.

Company profit [in \$]:	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Your donation [in \$]:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Continue

[Morally neutral decision by owner: manipulation screen for owner participants]

Imagine the following situation as detailed and vivid as possible.

Your company's last project was the construction of a community college in a poor neighborhood of a rather remote city. **However, due to coordination failures, the construction project was heavily delayed.** Because of the delay of the construction, the community that commissioned your company incurred significant additional costs. Now, the community's administration **blames your company for the delay and seeks damages from your company for these extra costs.**

It is **absolutely clear** to you that **it was not your company's fault** that caused the delay of the construction works. Now, your company has three alternatives. First, it can pay the full damages sought by the community. Second, it can try to negotiate an out-of-court settlement with the community below the full amount of these extra costs. This would spare both sides a costly and lengthy trial. Finally, your company could go to court.

After reviewing the contract signed with the community, your company's lawyers approach and inform both you and the CEO **that it would be highly likely that your company would win the lawsuit and would not have to pay any damages to the community.**

Although it is obvious that your company is not responsible for the delay, you are considering all available options. After intense deliberation, you decide to go to court. The court agrees with your company's arguments: your company succeeds and wins the lawsuit.

After the deduction of the lawyers' and legal fees, this decision secures a project profit of \$20 for your company. Because of the strategic importance and size of this project and to additionally motivate the CEO, it had been agreed as part of her/his bonus scheme that s/he would receive a one-time bonus payment for this project in addition to her/his fixed wage of \$11 depending on the project's success. For this project, this bonus amounts to \$9. This means that from this project your company makes a profit of \$11 and the CEO's personal bonus is \$9.

Currently, the remaining company profit of this business period is \$11. However, the final company profit of this period **will also be affected by the outcome of another project. Additionally**, just like in the real world, the final company profit can be **influenced by good or bad luck**. Specifically, a randomly determined whole number between -2 and +2 will be added to the project profits. At the end of the study you will receive the final company profit of this period as your personal earnings from this study.

Continue

[Morally neutral decision by owner: decision screen for owner participants]

Recall that you are still in the same business period. You have just been informed about the **positive outcome of your decision to argue in court against the liability demands by the community's administration.**

Now, your company **is commissioned** by a local initiative from a **different community** to renovate its community center in a rather poor area. The initiative hopes to reduce tensions and potential aggression between members of its community, to revitalize the neighborhood, to increase residents' involvement as well as solidarity, and to improve the community life by making the community center safer to use, providing easier access to people with disabilities, and creating more space for projects and events. While this initiative has enough funds to commission your company for the most basic works, it also has plans and ideas that would allow it to achieve more of its goals than with the basic renovation project. However, the extended project exceeds its current budget. For this reason, the initiative decided to ask for donations. The extent of the renovation project, its quality and success increase with the resources invested in the project: The more resources are provided, the higher is the value to the initiative and the community.

Representatives of the initiative **ask you** whether **you would personally donate** to their project. The more you donate, the costlier it is for you, but the better it is for the initiative's project. They also inform you that other representatives are asking the CEO of your company to support their project with a personal donation.

Depending on the available profit generated by your company in this business period, how much are you willing to donate to the initiative's renovation project?

As explained above, you will receive the final company profit at the end of the business period. From this, you can make a donation to support the initiative's renovation project. So far, you know that the initial construction project (the community college) generated a profit of \$20 after the deduction of the lawyers' and legal fees and that your CEO received a one-time bonus payment of \$9 in addition to her/his fixed wage of \$11. Therefore, that initial project resulted in a profit of \$11 for your company. However, the business period did not stop at this point and the initial construction project is not the only project of your company. The final company profit at the end of the period is influenced by the CEO's additional operative decision(s) as well as good or bad luck. As in real life, daily operative decisions are the CEO's responsibility and you will not be able to disentangle the effect of her/his operative decision(s) from the effect of good or bad luck.

We will inform you about the exact amount of the final company profit at the end of the study. For now, you only know that it will be between \$9 and \$22. Therefore, we ask you to indicate the amount that you want to donate depending on the final company profit. Please indicate in the following table **in the bottom row** the amounts you are willing to donate **from your personal earnings** for each of the possible cases of the final company profit. The bold numbers show the possible final company profits of this business period: to guarantee your show-up fee you are not allowed to donate an amount larger than the difference between the company profit and \$7. For example: in case of a company profit of \$9, your maximum donation can be \$2; in case of a company profit of \$22, your maximum donation can be \$15.

Please imagine the situation as detailed and vivid as possible and answer the following question. Please read the explanation to the question carefully.

[Please complete all the cells and confirm your decisions by clicking the "continue" button.]

Note: We will **actually** deduct the amount you indicate from your final personal earnings and **donate it to a real world charity** supporting construction projects for people in need. So, your indicated amount **will reduce your personal earnings from the study** and will be donated to this charity.

Please indicate how much you are willing to **donate** to the initiative's renovation project for each of the possible final company profits.

Company profit [in \$]:	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Your donation [in \$]:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Continue

Questionnaire

Please answer the questions on the next pages to give us a better understanding of your decisions.

For the following questions, please **think back to the time when the decision was made to go to court and before you made the [for CEOs: two] decision [for CEOs:s] to support the initiative's renovation project.**

How guilty did you feel?						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6
Not at all						Very
In your opinion, was the company morally entitled to the profit from the initial project by not paying damages to the community?						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6
Not at all						Very
From a moral perspective, how fair did you find the decision to go to court?						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6
Not at all						Very
The description asked you to imagine a situation where this decision was already made: If you had had the choice in reality to decide whether to go to court in the situation described or not, how likely would you personally have decided to go to court?						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6
Not at all						Very

For the following question, please **think back to the time when you made the decision to support the initiative's project by granting a discount on behalf of the company.** [*Only CEOs*]

When you made the decision to support the initiative, how strongly did you consider the company's potential future business relations with that <u>particular</u> initiative?						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6
Not at all						Very

Please answer the following questions about your general thoughts and beliefs.

How strongly do you agree with the following statement?

Shareholder value maximization within the legal boundaries should be the **sole goal of profit-oriented companies**.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	-2	-1	0	1	2	3
Very strongly disagree			Neither disagree nor agree			Very strongly agree

How strongly do you agree with the following statement?

A high-ranking manager, such as a CEO, should in all his business decisions **solely consider what is in the best interest of the company's owner(s)**.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	-2	-1	0	1	2	3
Very strongly disagree			Neither disagree nor agree			Very strongly agree

How strongly do you agree with the following statement?

Companies have the **moral obligation to provide more societal benefits than is mandated by law** (e.g. by donating, engaging in voluntary socially responsible activities that create more costs than benefits).

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	-2	-1	0	1	2	3
Very strongly disagree			Neither disagree nor agree			Very strongly agree

How strongly do you agree with the following statement?

In general, high-ranking managers, such as a CEO, should **leave the decision to do good with a company's money** (e.g. granting discounts or donating company money) **to the owner** of the company.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	-2	-1	0	1	2	3
Very strongly disagree			Neither disagree nor agree			Very strongly agree

Being generous as a company, e.g. as seen in this example by granting discounts or by donating company money to a charity, can be seen as a way to improve a company's reputation or increase employee engagement and commitment which could pay out in the long run. In your opinion, **how beneficial is this from a cost-benefit perspective for a company in general?**

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	-2	-1	0	1	2	3
Creates much higher costs than benefits			Cost and benefits are more or less equal			Creates much higher benefits than costs

Listed below are some characteristics that may describe a person: *caring, compassionate, fair, friendly, generous, helpful, hardworking, honest, and kind*. The person with these characteristics could be you or it could be someone else. For a moment, visualize in your mind the kind of person who has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this person would be like, answer the following questions.

	Strongly Disagree		Neutral		Strongly Agree
It would make me feel good to be a person who has these characteristics.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2
Being someone who has these characteristics is an important part of who I am.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2
I strongly desire to have these characteristics.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2
I often wear clothes that identify me as having these characteristics.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2
The fact that I have these characteristics is communicated to others by my membership in certain organizations.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2
I am actively involved in activities that communicate to others that I have these characteristics.	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2

The following questions are supposed to see what you still remember from the setting described. Please answer them to the best of your memory.

Who made the decision to go to court?

- ☐ You as CEO [*for owners:* You as Owner]
- ☐ The owner [*for owners:* CEO]

Was the final company profit of this business period **affected by a randomly determined element**?

- ☐ Yes
- ☐ No

Who received the remaining final company profit at the end of the business period?

- ☐ You as CEO [*for owners:* You as Owner]
- ☐ The owner [*for owners:* CEO]

At one point you decided about **granting a discount to the initiative's project on behalf of your company**: Did this discount **affect your personal earnings** from the study? [*Only CEOs*]

- ☐ Yes
- ☐ No

At one point you decided about **granting a discount to the initiative's project on behalf of your company**: Did this discount **affect the company's profit and, therefore, the owner's personal earnings** from the study? [*Only CEOs*]

- ☐ Yes
- ☐ No

Thank you for participating in this study.

Finally, we would like to ask you to provide a few personal details. Recall that your answers will remain completely anonymous and that we will not be able to link your answers to your identity.

In which phase of your studies are you currently? (Please choose only one.)
<input type="radio"/> Bachelor
<input type="radio"/> Master
<input type="radio"/> Other, please specify: _____

What is your major?	Please specify: _____
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Number of business and economics classes attended so far during your studies?	_____
How many terms have you attended university?	_____ terms.
How many years of practical experience do you have?	_____ years.
How old are you?	_____ years.

What is your gender?
<input type="radio"/> Female
<input type="radio"/> Male

What is your nationality?	Please specify: _____
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[Exit-screen: thank-you, exit instructions, and payment information]

ESSAY 2

Speech Act Theory and CSR Accounting Research: A Methodological Comment on “The Unintended Effect of Corporate Social Responsibility Performance on Investors’ Estimates of Fundamental Value”

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Abstract:

I design and conduct an experimental study to test an alternative explanation for the results of the study on “The Unintended Effect of Corporate Social Responsibility Performance on Investors’ Estimates of Fundamental Value” by Elliott, Jackson, Peecher, and White (2014). The authors find that explicitly assessing a firm’s positive CSR performance before estimating the firm’s value results in lower estimates than the estimates without a prior explicit assessment. They explain their results by the correction of a misattributed affect. However, according to an alternative explanation rooted in speech act theory, respondents might have understood the explicit assessment –that is supposed to reduce any unintended influence– differently than intended by the researchers and might have subtracted important information from their overall assessment of the firm’s fundamental value. Finding support for this alternative explanation would question the validity of the authors’ interesting results regarding the role of affective reactions in firm valuations involving CSR performance information. Following the two competing theoretical explanations, I predict two specific patterns resulting from the comparison of three conditions. As participants, I recruited students in Switzerland and the US as participants: combined, these provide me with a relatively large sample to test the two explanations. However, I cannot find empirical support to claim differences between conditions for the estimates of the fundamental value. This implies that I cannot replicate the effect of Elliott et al. (2014). Given the potentially far-reaching implications of their study, knowing about the limited robustness and generalizability of their results is important for the research community.

Keywords: Corporate Social Responsibility (CSR), Speech Act Theory, Affect-as-Information, Method, Replication

I. Introduction

In “The Unintended Effect of Corporate Social Responsibility Performance on Investors’ Estimates of Fundamental Value“, Elliott, Jackson, Peecher, and White (2014; in the following: EJPW) report an experiment in which they examine the effect of Corporate Social Responsibility (CSR) information on a firm’s fundamental value estimates. EJPW find that explicitly assessing a firm’s positive CSR performance before estimating the firm’s value decreases these estimates compared to estimates without a prior explicit assessment. For negative CSR performance, EJPW find directional evidence that firm value estimates are higher after an assessment compared to those without assessment. The authors conclude that an explicit assessment mitigates the effect of an unintended overweighting of CSR information and explain this as being caused by an affective reaction to the CSR performance. By having participants explicitly assess CSR performance, the authors expect to correct the unintended reaction by making participants aware of the affect’s source (Schwarz and Clore 1983, 2003). Without an objective benchmark, the authors treat the estimate after this intervention as the best available standard: in comparison, estimates without assessment are considered as being unconsciously influenced.

In this study, I suggest and test an alternative explanation for this effect. The observed effect may also have been caused by the information exchange between experimenter and participant, and, specifically, the procedure to elicit estimates from the participants. The order of the questions asked in the experimental instrument may have created a difference between what the experimenters were asking and what participants thought the experimenters were asking. Specifically, when participants were asked first about the CSR performance, they may have “subtracted” the influence of CSR when estimating the firm value. Importantly, they may have done this because of a conversational norm to avoid giving redundant information and not because of an unintended affective misattribution. In EJPW’s experiment design, both reasons (conversational and affective) would lead to the same pattern of effects. However, importantly for research on the role of CSR information, implications of the results differ according to the

explanation. An unintended affective misattribution would create distorted estimates that can be improved by an explicit assessment. In addition, it could be claimed that CSR influences investors via affective reactions. However, if the alternative conversational explanation were true, an explicit assessment would actually produce worse estimates. In this case, what is removed by the explicit assessment would actually be a relevant input for estimating a firm's value and not only an affective reaction. Particularly without an objective benchmark (Guiral, Moon, Tan, and Yu 2017), the conclusion could be questioned that explicitly assessing CSR performance before estimating a firm's value actually produces better outcomes. Moreover, support for an alternative explanation because of conversational norms would be important from a methodological standpoint. It would raise awareness for the design of research instruments when specific questions are asked before questions that are more general. This is particularly important if these assessments are intended to correct a misattribution of affect to its appropriate source (Schwarz and Clore 1983, 2003; Forgas 2006). What is removed by the researchers' intervention may not be an unintended effect, but an important element of the answer.

Specifically, the alternative explanation proposed in this paper is rooted in speech act theory: Grice (1975) assumes that conversations serve the rationale of exchanging meaningful and non-redundant information. For respondents, following this "Cooperative Principle" means providing as much information as necessary when answering a question, but not more than is required. Asking participants, e.g. in a survey or questionnaire, for their estimates or judgments constitutes a form of conversation and information exchange as participants respond to questions asked by researchers. Particularly in a scientific (oral or written) survey, respondents perceive this kind of conversation as serving the rationale of exchanging information (Tourangeau, Rips, and Rasinski 2000; Strack, Schwarz, and Wänke 1991; Clark and Schober 1992).

Applied to the specific context of CSR, participants explicitly assessing a firm's CSR performance before estimating its fundamental value could get the impression that they have already provided information on the firm's CSR performance (i.e. a "part" of the firm's overall

assessment). Therefore, they might subtract this subset from the following more general and overall estimate of the firm value (i.e. the “whole”). When first asked to assess explicitly CSR performance, participants may be reluctant to include a CSR effect on firm value when providing an assessment of a firm’s value. Participants could consider including the CSR component to be redundant with their first response about the CSR performance. As cooperative respondents, they would avoid providing information twice and exclude it (Bless and Schwarz 2010) when a conversational situation is perceived as ambiguous and unclear. This exclusion might result in a “subtraction effect” (Schuman and Presser 1996) as a “part” can be subtracted from the “whole” in question implying that respondents change their construal of the “whole” compared to the construal of the “whole” without an explicit assessment of the “part”.

An example can help illustrating the theory’s central reasoning.¹ Imagine you have a spouse who just caught an infection and two children who are currently fine, and someone asks you for the well-being of your relatives. The order of the two questions a) “How is your family?” (“whole”) and b) “How is your spouse?” (“part”) would affect how you construe and answer the more general question a). Being first asked a), you would probably refer to some average of your family’s well-being and answer something like “So-so” followed by a more precise answer to the following question b) regarding your spouse’s well-being (“Not so well.”). However, being asked b) first, you would provide this specific information (“Not so well.”) and mentally subtract the subset “spouse” from the set “family” when answering the following question a). The reason for this is that you have already provided information regarding your spouse and do not want to provide redundant information. Although you are answering exactly the same question a), the order of the two questions matters for the understanding of what is actually referred to. Now, you would probably understand the content of “family” differently and only provide

¹ The following example is based on Clark and Schober (1992).

information regarding the well-being of your children: “Fine!” Note that it is common for respondents to answer questions not literally, but in a way that they perceive to be most helpful to the questioner. This occurs in daily conversations and can be explained by different layers of speech acts (Austin 1962). To illustrate this, think about a situation where you are asked whether you have the time. Only few people would not directly tell the time (assumed they know it), but answer “Yes.” However, this would be the correct answer to the literal question asked (Clark and Schober 1992).

A similar “subtraction effect” might have occurred in EJPW and might (partially) explain their results. Asking participants to estimate a firm’s fundamental value constitutes a “whole” question, whereas asking for CSR performance constitutes a “part” question. The experimental intervention to explicitly assess CSR performance introduced a “part” question before eliciting the dependent variable in some, but not all conditions. Thus, the intervention may have changed some participants’ construal of what was asked because information about CSR performance constitutes a different subset of the set of information needed to estimate a firm’s future development: assessing financial performance is traditionally a prominent subset of this whole set of information; assessing performance constitutes another subset.

The purpose of my study is to test whether a “subtraction effect” can be an alternative explanation to the affect interpretation offered by EJPW. To test the validity of this alternative explanation I conduct an experiment with 142 participants (51 students from a Swiss university and 91 participants from a large public US university) based on the materials of EJPW. I focus on the case of positive CSR performance. Here, the support for EJPW’s results is strongest and provides the best test case. Participants were randomly assigned to one of three conditions: 1) Participants *are not explicitly* asked about a firm’s CSR performance before they estimate the firm’s fundamental value. 2) Participants *are explicitly asked* about a firm’s CSR performance before they estimate the firm’s fundamental value. 3) Participants *are explicitly asked* about a

firm's CSR performance before they estimate the firm's fundamental value; however, *an explanation is added* to clarify the conversational context of the fundamental value question, which prevents participants from changing their construal of the "whole". Conditions 1) and 2) replicate the corresponding conditions in EJPW to establish a baseline effect, a decrease of the fundamental value estimate. Condition 3) allows testing the alternative explanation. Depending on the explanation, a difference between conditions 2) and 3) is or is not to be expected. According to the "affect explanation", there should be no difference; according to the "speech act explanation", fundamental value estimates should be higher in 3).

However, I cannot find empirical support to claim any differences for fundamental value estimates between the three conditions. This implies that I cannot replicate the effect from EJPW for which I want to test an alternative explanation. These (non-)findings question how strongly we should rely on the affect effect reported by EJPW. Knowing about the robustness of prior and potentially influential research is important for experimental research. Problems of lacking replication studies are well-discussed (Salterio 2014) and calls for them can be increasingly encountered within the accounting community (Dyckman and Zeff 2014; Shields 2015) and outside of it (Open Science Collaboration 2015).

The remainder of the paper is as follows: Section 2 describes the theory in detail and develops my hypotheses. Section 3 explains my research design. Section 4 reports the results of the experiment, and section 5 concludes the paper.

II. Theory and Development of Hypotheses

In the case of a firm with positive CSR performance information, EJPW find that having participants explicitly assess CSR performance before making the fundamental value estimates results in lower estimates than estimates without a prior explicit assessment. The authors explain their results using affect research. They follow prior research by Schwarz and Clore (1983, 2003) who find that the current state of the weather can lead to an affective reaction and an undue effect of the weather on the respondents' judgments about their general life happiness

(Tourangeau and Rasinski 1988). The reason is that respondents can mistake their affective reaction as relevant information regarding the judgment they are actually supposed to make (c.f. also Forgas 2006): thus, they misattribute the source of the affect and use it as information regarding the judgment. However, once the researchers direct the participants' attention to the actual source of this affect (i.e. the state of the weather), its influence on the following judgement disappears: participants are now enabled to attribute the affective response correctly to its source and do not confound it with the judgment to be made. This correction of a misattribution is common and has been employed in other accounting research, e.g. with regard to the effect of readability on investors (Rennekamp 2012) or for jurors in an auditing context (Kadous 2001). EJPW apply this "affect explanation" to a CSR setting and find results consistent with this theoretical explanation.

It is, however, possible to draw on an alternative "speech act explanation" to explain EJPW's results. According to this, one could argue that participants' understanding of the question about the firm's fundamental value might differ from what the researchers actually intend to ask. In this case, the authors' results might be considered an artifact of their data elicitation procedure. This reasoning is based on Grice's (1975) seminal contribution to speech act theory. It focuses on the relation of what is meant when an individual utters something and what is understood, inferred, and interpreted by an interaction partner (Strack and Martin 1988). These interactions include question-answer-situations that are key to experimental and (oral or written) survey research (Tourangeau et al. 2000; Strack et al. 1991; Clark and Schober 1992).

Specifically, what has been observed by EJPW may be a so-called "subtraction effect" that belongs to problems arising in so-called "part-whole-questions" (Schumann and Presser 1996). These refer to situations where an individual is asked about a specific subset before being asked about the more general set it belongs to (Strack, Martin, and Schwarz 1988; Mason 1994;

Hilton and Slugowski 2001).² One example for a subtraction effect is the spouse-family-example from the introduction (Clark and Schober 1992). Similarly, Bradburn and Mason (1964) provide evidence that respondents in a survey subtract the evaluation of the role of their marriage state from the evaluation of their general life happiness when being asked the marriage question first. Bradburn (1982) refers to evidence for a subtraction effect in the 1980 General Social Survey, and Tourangeau and Rasinski (1988) explain this evidence as being consistent with an understanding of being asked: “*Aside* [emphasis added] from your marriage, how happy are you?” In another survey, respondents are asked about their general support of legal abortions for married women: the respondents’ support depends on the positioning of the specific question whether pregnant women should have the legal right to an abortion when there is a high chance of a birth defect (Schumann and Presser 1996). The authors provide a further example where respondents are asked for their consent to the two statements that driving standards have decreased for people in general and that they have so specifically for young drivers. Again, the support to these statements depends on the order of the questions. Relatedly, Mason (1994) reports evidence that respondents subtract the state of a local economy from a global economy when they are asked about the local economy first.

These subtractions can be explained by Grice’s (1975) explanations how conversations usually aim at exchanging meaningful information. According to these, conversations follow a “Cooperative Principle”.³ This implies giving as much information as necessary, but not more

² These effects can go two ways. They can be overly consistent and have too high correlations between the “part” and the following “whole” questions; alternatively, they can consist in the removal or subtraction of the “part” from the “whole”. Different labels for these phenomena can be found in the literature, e.g., subtraction/contrast/exclusion/ redundancy for the latter and consistency/assimilation/inclusion/salience effects for the former (Schuman and Presser 1996; Schwarz, Strack, and Mai 1991; Bless and Schwarz 2010; Bradburn and Mason 1964).

³ Grice writes about a general purpose and fundamental feature of conversations. There might be special cases where cooperation is not the goal of a conversation and, specifically, conversational conventions might be (mis)used to mislead a conversation partner. Furthermore, these might not be that extraordinary in the field of accounting (Bloomfield 2008, 2012); however, the content of this study’s application is unproblematic in this regard.

than is required. The examples listed above consist of a “part”-question preceding a corresponding “whole”-question. Respondents interpreting their first answer as already providing information about the “part” want to be cooperative and avoid giving redundant information (Bless and Schwarz 2010). Therefore, they exclude the “part” when providing the assessment and evaluation of the “whole”.

Bless and Schwarz (2010) describe a model of the circumstances under which these “part-whole-effects” are most likely to occur. When making evaluative judgments, respondents form mental representations of the objects about which they are asked. These representations are context-sensitive and influenced by what is easily accessible, salient, and appears to be relevant (c.f. also Strack and Martin 1988). Consistency effects occur when the salient, specific subsets are understood by respondents as valid and adequate proxies for the more general set. In these cases, the correlation between assessments of the “part” and the “whole” tends to be overly high. On the contrary, subtraction effects occur when the salient, specific subset leads to a change in the representation of the more general set, e.g. by mentally subtracting the former from the representation of the latter. How the first salient item and, therefore, the whole context are understood can depend on conversational norms (Bless and Schwarz 2010).

This reasoning can be applied to the question of the informative value of CSR performance information for firm valuations. Part of forecasting a firm’s development is an adequate assessment of the actions taken by a firm with regard to its dynamic environment. CSR expenditures can belong to these actions. Prior literature has argued that they constitute investments indicating or leading to positive future financial performance. For example, (potential) employees might value CSR activities (Balakrishnan, Sprinkle, and Williamson 2011; Bhattacharya, Sen, and Korschun 2008; Douthit, Martin, and McAllister 2017) and customers might reward a strong CSR performance (Lev, Petrovits, and Radhakrishnan 2010). By making CSR investments, companies may save energy costs (Rangan, Chase, and Karim 2015) and decrease the risk of negative publicity or government regulation (Paine 2000). Prior research suggests that the costs

of capital can be lower for strong CSR performers (Dhaliwal, Li, Tsang, and Yang 2011; El Ghoul, Guedhami, Kwok, and Mishra 2011; Cheng, Ioannou, and Serafeim 2014; Goss and Roberts 2011) and that firms might invest in CSR to signal their anticipation of stronger future financial performance (Lys, Naughton, and Wang 2015).

Critics, however, claim that money might be spent on CSR not to increase firm value but to serve personal moral interests. From an agency-theory-perspective, this would mean a misuse of principals' resources (Friedman 1970). Prior research provides evidence that agents' decisions to "do good" can reduce their principals' wealth. Firms' charity donations may be associated with their CEO's personal charity preferences and the capital market values cash holdings less for companies with a higher level of CSR spending (Masulis and Reza 2015). Consistent with agency problems, increasing ownership and monitoring decreases CSR spending (Cheng, Hong, and Shue 2013; Barnea and Rubin 2010). Thus, CSR investments may have negative, positive, or no net effects on the future financial development of this firm (Waddock and Graves 1997). Hence, information about these actions taken is important for the analysis of a firm as potential investment. Information about potential investments can be considered as consisting of different subsets needed to estimate a firm's future development. The assessment of financial performance is traditionally a prominent subset of this comprehensive set of information (Elliott, Hobson, and Jackson 2011); information about CSR performance constitutes another subset.

Gathering data about the assessments of these subsets in experiments or (written or oral) surveys involves asking participants questions and, thus, a conversational interaction as described above. Asking participants in an experiment, e.g. in a questionnaire, about a firm's fundamental value constitutes a "whole" question, whereas asking for CSR performance constitutes a "part" question. Consequently, asking for an assessment of the CSR performance before asking for the general evaluation could lead to a subtraction effect because participants mentally subtract anything related to the subset CSR from the overall assessment of the firm's activities

and potential, i.e. the firm's fundamental value. Hence, participants' understanding of the more general and overall assessment would depend on whether participants explicitly assess CSR performance or not (i.e. EJPW's manipulation). These arguments provide an alternative, speech act theory based explanation of the effect reported in EJPW: the explicit assessment of the CSR performance could have the effect that participants subtract and exclude CSR performance assessments from their general and overall assessments of a firm's fundamental value. Thus, the manipulation might not correct a misattribution of an affective reaction, but might change the participant's understanding of the more general assessment, i.e. the firm's fundamental value.

The two alternative explanations (i.e. affect and speech act) lead to the same directional prediction for the effect of an explicit assessment on estimates of a firm's fundamental value per share. According to both, these estimates should be reduced in the case of positive CSR performance. Thus, a further step is necessary to test these competing theories and their explanatory power. Prior research has provided a remedy for both subtraction and consistency effects in part-whole-questions (Strack et al. 1988; Schwarz et al. 1991; Clark and Schober 1992). As the reason for the undesired effects is the ambiguity involved in the respondents' interpretation of the questioner's intent, it suffices to clarify the conversational context and to suggest an unambiguous interpretation of the question asked. For example, this can be achieved by introducing a short explanation of the meaning of the question and the relation between the "part" and "whole" questions. I.e., it can be made clear to participants not to subtract a subset from the more general set, but rather to integrate it in an overall evaluative judgment. This would still allow asking the specific question first to assure a correct attribution of a potential affect's source.

Hence, clarifying the conversational context in an additional condition allows having participants explicitly assess a firm's CSR performance before estimating its fundamental value; however, it also allows testing the competing theories. Depending on the explanation (affect vs. speech act), the expected pattern of these three conditions differs. Both explanations predict a

negative effect of an explicit assessment on the fundamental value per share when CSR performance is positive. However, predictions differ with regard to the effect of a modified explicit assessment in which the conversational context is made clear. According to the “affect explanation”, there should be no difference between an explicit and a modified explicit assessment. From an affective perspective, these two conditions are equivalent; importantly, there exist no reasons to expect that a clarified conversational context affects estimates for reasons unrelated to the understanding of the question. According to the “speech act explanation”, clarifying the conversational context should prevent or undo a subtraction effect. Thus, there should be a positive effect of a modified explicit assessment compared to an unmodified explicit assessment, resulting in a pattern over the three conditions resembling a “v”. Importantly, as affect attribution is not affected, adding a third condition clarifying the conversational context allows a clean test of the competing explanations. Thus, I state two competing hypotheses regarding the pattern of the three conditions to test the competing explanations.

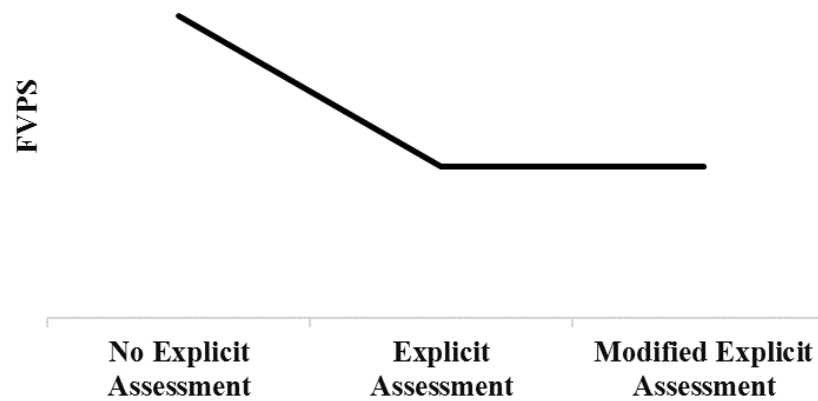
H1 (“Affect Explanation”): 1) When CSR performance is positive, investors who do not explicitly assess CSR performance estimate a firm’s fundamental value higher than investors who explicitly assess CSR performance. 2) Clarifying the conversational context of the explicit assessment does not have an additional effect.

H2 (“Speech Act Explanation”): 1) When CSR performance is positive, investors who do not explicitly assess CSR performance estimate a firm’s fundamental value higher than investors who explicitly assess CSR performance. 2) Clarifying the conversational context of the explicit assessment moves investors’ estimates of a firm’s fundamental value towards estimates without an explicit assessment.

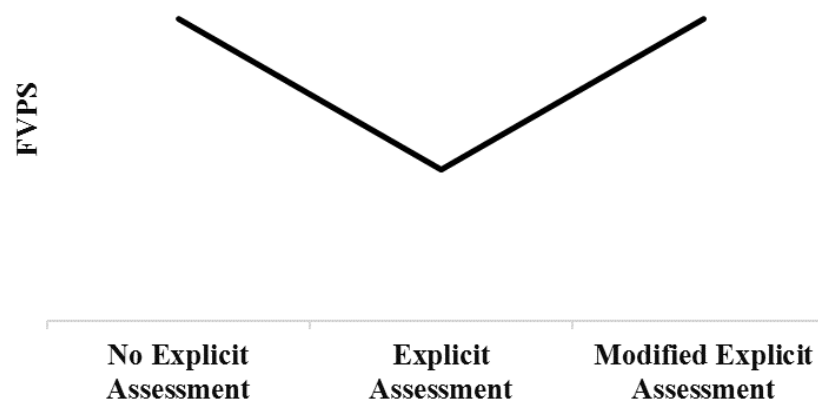
Figure 1, Panel A and B, depicts and contrasts these two expected patterns.

Figure 1: Expected Patterns for Hypotheses

Panel A: H1 (Affect Explanation)



Panel B: H2 (Speech Act Explanation)



Note: Estimates of the firm's fundamental value per share (FVPS) as calculated by the template provided.

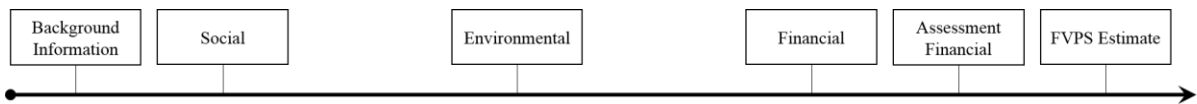
III. Method

Design

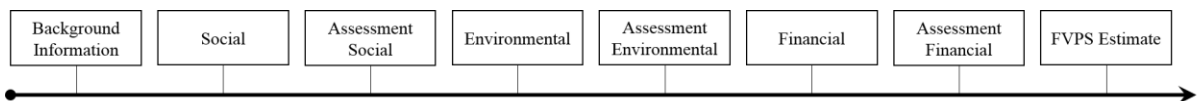
I use a 1x3 between-subjects experimental design with three different realizations of assessing the positive CSR performance. Except for the additional third condition, this study closely replicates the experiment conducted by EJPW using the materials sent to me by the authors. However, different from EJPW, I focus on the two positive CSR performance conditions (with and without explicit assessment): for these, EJPW have found the strongest support for their theory. Figure 2, Panel A through C, shows the timeline and contrasts the different steps of participants according to their condition.

Figure 2: Timeline for Each Condition

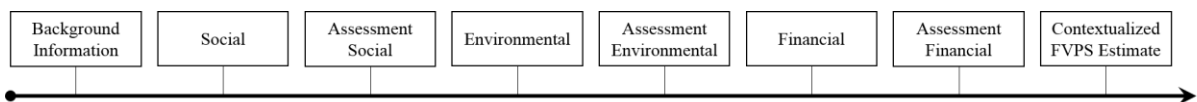
Panel A: Condition 1 “No Explicit Assessment”



Panel B: Condition 2 “Explicit Assessment”



Panel C: Condition 3 “Modified Explicit Assessment”



Note: Due to space restriction, “Performance” was left out after “Social”, “Environmental”, and “Financial” in this figure.

In the first condition (“No Explicit Assessment”), participants are provided with background information about a firm and its industry, information about the firm’s positive social and environmental performance as well as information about its financial performance. While

financial performance is assessed, there is no explicit assessment of the social and environmental performance in this condition before the fundamental value per share (FVPS) is estimated. In the second condition (“Explicit Assessment”), participants are provided with the same materials. However, they are additionally asked to assess explicitly the social and environmental performance directly after reviewing the corresponding positive CSR performance information. Participants are also asked to assess the financial performances before they estimate the FVPS. The third condition (“Modified Explicit Assessment”) is new and parallels the second condition except for one important detail: when asked to estimate the FVPS, the directions to this question clarify the conversational context and the question’s relation to the questions asked before. A short paragraph (see below for the exact wording) is added to make it clear to participants that they are now asked for an *overall* evaluation of the firm as potential investment –after having answered questions about the *specific performances*.

Participants

Like EJPW, I rely on business administration students as proxies for reasonably informed non-professional investors. First, I recruited 51 Swiss students mostly pursuing a master degree from their accounting course. To increase the power of my study, I collected additional data from 91 business administration students from a US university. Thereby, I could use a very similar population to replicate the EJPW study and I could guarantee that there were no language problems with the English materials. Additionally, having two samples provides the opportunity to compare results between participants from these two countries. For my main analyses, however, I collapse the two samples. In my supplementary analysis, I show that findings are not driven by differences between samples.

From these 142 students, three observations were discarded from the analyses.⁴ Thus, my overall sample consists of 139 observations (51 Swiss and 88 US students), assigned randomly

⁴ The materials they returned revealed that they did not understand these or that they did not try to work on the task.

to three conditions. Specifically, there were 47 in the “No Explicit Assessment” condition, 45 in the “Explicit Assessment” condition, and 47 in the “Modified Explicit Assessment” condition.

Procedure

Participants were randomly assigned to one of the three conditions. In addition to the informed consent form, they had to sign, three envelopes containing the experiment materials were placed in front of the participants, which they were asked to complete in the order given to them. EJPW indicate that their participants were familiar with the residual earnings model used in the study. Thus, to make sure that participants had a basic understanding how to use the Excel template with the valuation model, US students were given a brief introduction before an experiment session started.⁵

The first envelope always contained overview information about the firm XYZ and its industry. All participants were then provided with information about the firm’s positive social performance. Only in the two assessment conditions, participants then had to assess the social performance by answering several questions about it. Next, all participants were provided with the firm’s positive environmental performance: again, only participants in the two assessment conditions had to assess it. On the last pages in this first envelope, participants in all conditions reviewed and explicitly assessed the firm’s financial performance.

Participants were then asked to proceed with the second envelope. Only in the “Modified Explicit Assessment” condition, participants’ directions for the first question begin with a small paragraph clarifying the conversational context and the question’s relation to the former questions. It is important to make the correct conversational context clear to participants to test the alternative “speech act explanation”. Specifically, participants were provided with the following contextualization:

⁵ A similar approach was also used by Guiral et al. (2017). A brief introduction was not given to the Swiss sample because I knew they were already familiar with similar valuation models.

By now you have received data on XYZ's social responsibility performance, environmental performance as well as financial performance and **answered specific questions related to these different performances**. Based on the data received we will now ask you to come up with an **overall evaluation** of XYZ as potential investment and estimate XYZ's fundamental value.

The directions in the other two conditions started without this clarification. As dependent variable, participants in all conditions then had to estimate the firm's FVPS using a residual earnings model. For this purpose, participants were provided with a prepared Excel sheet to calculate the model based on their estimates for the firm's income of the next four periods, the rate of the cost of capital, and the long-term growth rate (Penman 2009). After two question sets on their personal willingness to invest and their expectations of other investor's willingness to invest, all participants were asked to store their materials in an envelope and proceed with the third envelope that contained questions about this particular case, the participants' general attitudes, demographics, and the manipulation checks. Participants finished their participation and collected their fixed payment of \$15 (respectively CHF 20).

IV. Results

Manipulation Checks

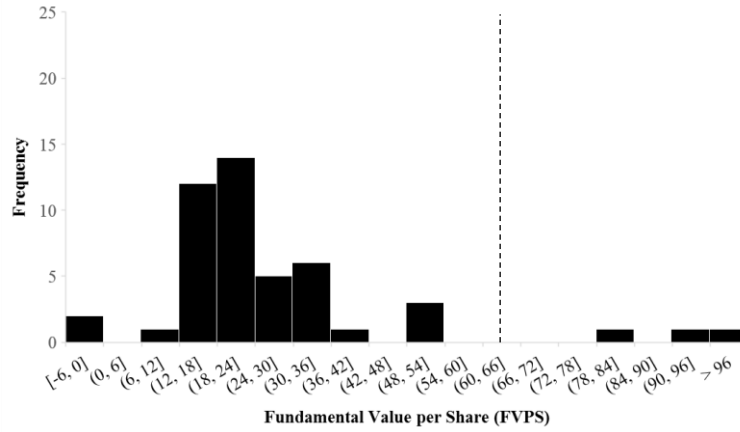
Consistent with EJPW, and to check whether participants understood that the firm showed a positive CSR performance, I asked participants whether the firm's social (environmental) performance was above, about, or below the industry average. 84.2% (92.1%) of the participants answered this question correctly for the social (environmental) performance.⁶ These values are comparable to the ones in EJPW.

Because EJPW report an outlier problem, I check whether my data is also affected by outliers. Figure 3, Panel A through C, shows histograms for my three conditions.

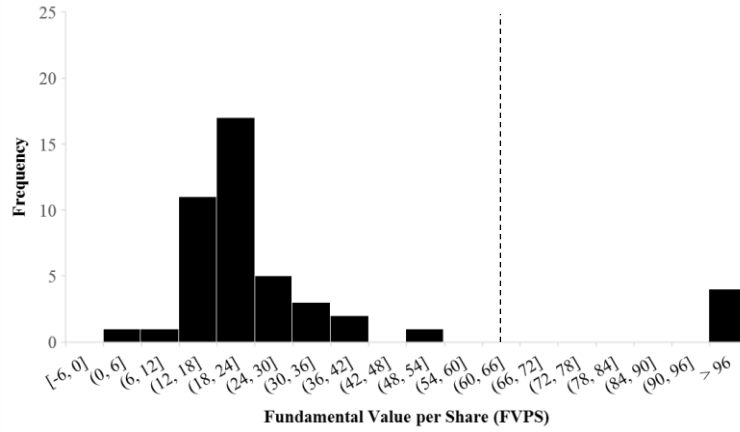
⁶ Analyzing only participants having provided correct answers to these questions does not change my inferences.

Figure 3: Histograms by Condition

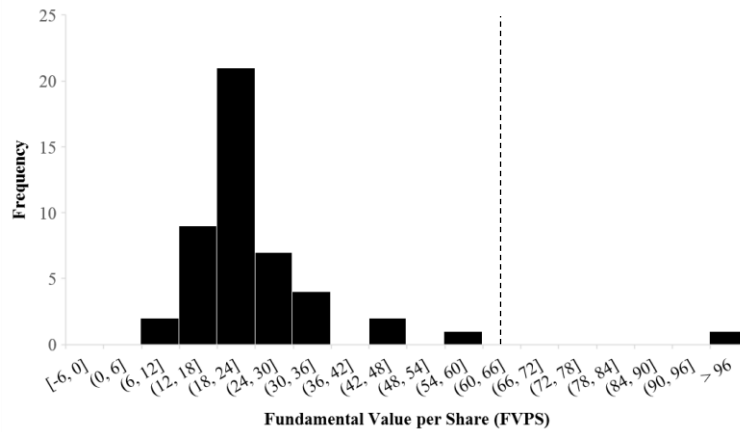
Panel A: Condition 1 “No Explicit Assessment”



Panel B: Condition 2 “Explicit Assessment”



Panel C: Condition 3 “Modified Explicit Assessment”



Notes: Estimates of the firm’s fundamental value per share (FVPS) as calculated by the template provided. The dashed line marks the cutoff for outliers (FVPS > 60).

Based on these, participants with FVPS estimates higher than 60 are discarded for the parametric tests. This still means that I can use data from 85 participants for the conditions for the replication of the EJPW study (33 participants).

Descriptive Statistics

Table 1 shows the descriptive statistics of my dependent variable (FVPS). They are similar to the ones from EJPW: means are 22.83 in the “No Explicit Assessment” condition, 22.07 in the “Explicit Assessment” condition, and 23.11 in the “Modified Explicit Assessment” condition (Table 1, Panel A). While this pattern rather resembles the “v” predicted in H2, differences between conditions are relatively small.

Table 1: Descriptive Statistics (Mean, Median, (Standard Deviation), [Observations]) for Estimates of FVPS

Dependent Variable: FVPS	Condition		
	No Explicit Assessment (1)	Explicit Assessment (2)	Modified Explicit Assessment (3)
<i>Panel A: Complete Sample</i>			
	22.83	22.07	23.11
	21.25	20.60	20.96
	(11.79)	(8.47)	(9.10)
	[44]	[41]	[46]
<i>Panel C: US Sample</i>			
	22.50	21.35	22.68
	20.57	20.66	20.24
	(11.01)	(5.64)	(9.27)
	[28]	[25]	[28]
<i>Panel B: Swiss Sample</i>			
	23.40	23.20	23.78
	22.56	19.84	22.27
	(13.41)	(11.75)	(9.06)
	[16]	[16]	[18]

Note: Participants’ estimates of the firm’s FVPS as calculated by the Excel sheet provided.

Tests of Hypotheses

The two competing hypotheses predict two different patterns of results over the three conditions. H1 predicts that investors who do not explicitly assess a CSR performance estimate a firm’s fundamental value higher than investors who explicitly assess CSR performance when

CSR performance is positive. It further predicts that clarifying the conversational context of the explicit assessment does not have an additional effect. While H2 predicts the same first effect, it additionally predicts a second effect in the opposite direction of the first effect. Specifically, according to H2 clarifying the conversational context of the explicit assessment moves investors' estimates of a firm's fundamental value towards estimates without an explicit assessment.

I use pairwise comparisons of the condition means to test my hypotheses. Table 2, Panel A, reports the results of the t-tests; Table 2, Panel B and C, shows an overview of the stepwise comparisons.

Table 2: Tests of Hypotheses

<i>Panel A: t-Tests</i>			
Dependent Variable: FVPS	Condition		
	No Explicit Assessment	Explicit Assessment	Modified Explicit Assessment
	(1)	(2)	(3)
Conditions (1) vs. (2)	22.83 vs. 22.07 t = .337, p = .737		
Conditions (2) vs. (3)	22.07 vs. 23.11 t = -.547, p = .586		
Conditions (1) vs. (3)	22.83 vs. 23.11 t = -.126, p = .900		
<i>Panel B: H1 (Affect Explanation)</i>			
	Prediction		
Step 1:	(1) > (2)		Not supported
Step 2:	(2) = (3)		Not rejected
<i>Panel C: H2 (Speech Act Explanation)</i>			
	Prediction		
Step 1:	(1) > (2)		Not supported
Step 2:	(2) < (3)		Not supported

Note: Estimates of the firm's FVPS as calculated by the Excel sheet provided.

Both hypotheses first predict that means of FVPS are higher in the “No Explicit Assessment” than in the “Explicit Assessment” condition. Finding support for this effect is key to this study because its goal is the test of two alternative explanations for this effect. While descriptive results are consistent with this prediction (22.83 vs. 22.07), this difference is statistically not significant ($t = .34$, $p = .74$). Because I am unable to find results corroborating this first effect and both H1 and H2 critically depend on it, I cannot find empirical support for both hypotheses. Importantly, this implies that I am unable to replicate the effect of EJPW.

For reasons of completeness, I still report tests for the second parts of H1 and H2. While “Modified Explicit Assessment” has a directionally higher mean than “Explicit Assessment” (23.11 vs. 22.07), this effect is not statistically significant either ($t = .55$, $p = .59$). In addition, means of “No Assessment” and “Modified Explicit Assessment” are statistically not different either (22.83 vs. 23.11, $t = .13$, $p = .90$).

Finally, similar to EJPW I use a non-parametric test. However, untabulated Wilcoxon rank-sum tests including outliers do not suggest any differences between conditions either (all $z \leq .51$, $p \geq .61$).

Supplementary Analysis

Differences between US and Swiss Participants

In a supplementary analysis, I test whether there exist differences between the US and the Swiss sample. Means (Table 1, Panel B and C) for “No Explicit Assessment” are 22.50 for US and 23.40 for Swiss participants; for “Explicit Assessment”, they are 21.35 for US and 23.20 for Swiss participants, and for “Modified Explicit Assessment”, they are 22.68 (US), respectively 23.78 (Swiss).

Although means generally seem to be higher for Swiss, participants, comparing Swiss and US participants within each condition does not yield significant differences (all tests untabulated): “No Explicit Assessment” ($t = .58$, $p = .56$), “Explicit Assessment” ($t = .71$,

$p = .48$), and “Modified Explicit Assessment” ($t = .44$, $p = .66$). Also collapsed across condition, the difference is statistically not significant ($t = .68$, $p = .50$).

More importantly, similar to the collapsed sample, means between conditions are not significantly different when compared separately for US and Swiss participants: “No Explicit Assessment” vs. “Explicit Assessment” (US: $t = .47$, $p = .64$; Swiss: $t = .04$, $p = .97$), “Explicit Assessment” vs. “Modified Explicit Assessment” (US: $t = .62$, $p = .54$; Swiss: $t = .16$, $p = .87$), and “No Explicit Assessment” vs. “Modified Explicit Assessment” (US: $t = .07$, $p = .95$; Swiss: $t = .10$, $p = .92$). Thus, H1 and H2 both are not supported regardless of the sample used.

V. Conclusion

This study aimed at providing and testing an alternative explanation for the interesting findings and potentially far-reaching implications of EJPW. While the authors provide an affect-based explanation for their results, I suggested that these are caused by the design and structure of their questionnaire. An alternative theory claims that participants might have subtracted some “part” of their overall “whole” assessment of the firm’s value to comply with Grice’s (1975) “Cooperative Principle” and, specifically, to avoid giving redundant answers. To claim support for my alternative and competing explanation rooted in speech act theory, my goal was to undo the effect of an explicit assessment by clarifying the conversational context while assuring a correct attribution of any potential affective reaction. Thus, I tried to replicate EJPW’s effect and to undo it in an additional condition with a modified explicit assessment.

To test my alternative explanation, I first conducted the study with 51 students in Switzerland. I recruited additional 91 business administration students from a large public US university to increase the statistical power and to very similar participants as EJPW. Despite the sample size being relatively large compared to the one used by EJPW, in neither sample separately nor in the combined sample can I find statistically significant differences between conditions. This implies that I am unable to replicate the first effect reported by EJPW for which I wanted to test an alternative explanation.

Although this study cannot make the (methodological) contribution it was intended to make, the non-findings are certainly relevant for CSR accounting research. Replication studies are important to revalidate scientific discoveries and serve as important protection against negative consequences from publication bias. Problems of lacking replication studies are well-discussed (Salterio 2014) and calls for them can be increasingly encountered within the accounting community (Dyckman and Zeff 2014; Shields 2015) and outside of it (Open Science Collaboration 2015). Whereas other research has shown that EJPW's findings might not generalize to investment professionals (Arnold, Hörner, Martin, and Moser 2018), this study suggests that the results from EJPW may not be very robust for non-professional participants either (Guiral et al. 2017). Thus, conclusions from this study should be drawn very cautiously, particularly, if they are based on the premise that CSR performance information is merely working through affective reactions of investors.

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ESSAY 3

How Do German and US Investment Professionals Use Corporate Social Responsibility Disclosures in Their Personal Investment Decisions and Recommendations to Clients?

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Abstract:

We conduct an experiment to examine German and US investment professionals' use of corporate social responsibility (CSR) disclosures when making personal investment decisions and investment recommendations to clients. We predict and find that both groups assess higher financial performance and invest more when positive CSR information is disclosed than when no CSR information is disclosed. However, these differences are only significant for German investment professionals. When CSR information is disclosed, both groups' assessments of CSR performance significantly affect their investment decisions. However, US investment professionals appear to require a higher level of assessed CSR performance than Germans before they increase their investments in response to disclosed CSR information as compared to when no CSR information is disclosed. Importantly, we also predict and find that both groups' investment behavior is not only affected by the expected financial effects of CSR activities on the firm, but also by the value they place on the societal benefits of the CSR activities. Finally, we find that when making investment recommendations to clients both groups use CSR information in essentially the same manner as they do when making personal investment decisions. Our findings have implications for researchers studying the empirical interrelation between CSR performance, financial performance, and investment behavior, as well as for standard setters and investors.

Keywords: Corporate Social Responsibility (CSR), Professional Investors, CSR Disclosures

I. Introduction

Recent review studies examining the association between corporate social responsibility (CSR) performance and financial performance suggest that this association may be small but significantly positive, albeit such research also reports conflicting findings (Brooks and Oikonomou 2018; Friede, Busch, and Bassen 2015; Lu and Taylor 2016; Margolis, Elfenbein, and Walsh 2009; Orlitzky, Schmidt, and Rynes 2003). While this suggests that investment professionals may consider CSR performance information relevant for investing decisions, there are many unanswered questions about how this influential and important group of investors use CSR performance information. First, we do not know whether investment professionals expect disclosed positive CSR performance to affect financial performance or the extent to which such expectations influence their investment decisions. Second, we know little about whether and how disclosed CSR performance information influences professional investors' investment decisions for reasons beyond any expected financial effects. More specifically, we do not know whether and how investment professionals' personal perceptions of a firm's disclosed CSR performance combines with their personal beliefs about the benefits of CSR activities for society to influence their investment decisions. Third, we do not know whether investment professionals' personal views about CSR influence their investment recommendations to clients (Ioannou and Serafeim 2015; Luo, Wang, Raithel, and Zheng 2015). Our study addresses these questions using data collected from both German and US investment professionals.

Some prior experimental studies using *non-professional* investors as participants suggest that investors may respond positively to CSR performance disclosures beyond any expected effect on financial performance because they value the societal benefits associated with CSR activities (Riedl and Smeets 2017; Martin and Moser 2016). Thus, investors' preferences for the societal benefits of CSR and any expected effect on financial performance could jointly affect investment decisions. Moreover, as preferences for the societal benefits of CSR likely differ across individuals, countries or cultures (KPMG 2011; BNY 2012; Amel-Zadeh and Serafeim

2017), such differences could help explain prior mixed evidence on investor reaction to CSR performance.

We use experienced investment *professionals* from Germany and the US as participants in our experiment for several reasons. First, experienced investment professionals may use CSR performance information in ways different from the non-professional investors used as participants in most prior experimental studies. Second, investment professionals are likely to have an outsized effect on market prices. Finally, because investment professionals often recommend investments to clients or make investment decisions on their behalf, it is important to understand whether and how their personal use of CSR information influences their decisions on behalf of their clients. In our experiment, the investment professional participants serve as both 1) highly sophisticated personal investors, and 2) professional financial intermediaries who provide investment advice to less sophisticated clients. Because we collect separate data sets from German and US investment professionals, we are able to investigate whether these separate groups make similar or different investment decisions and use similar or different decision processes.

There are several reasons why it is challenging to address our research questions using archival data. First, it is difficult to isolate investors' reaction to CSR disclosures because other disclosures and events relevant to firm value occur simultaneously. Second, even if investors' reaction to CSR disclosures can be isolated and documented, it is difficult to determine the reason(s) for this reaction. This is especially true if, in addition to expected financial effects, the reaction is influenced by investors' preferences for the societal benefits of CSR activities and this reaction varies across individuals. Finally, it is difficult to use archival data to examine individual investment professionals' personal investment decisions and to compare those decisions to their investment recommendations to clients.

We overcome the challenges of using archival data noted above by exploiting several advantages of experiments. First, we are able to isolate the impact of CSR disclosures on investment choices by manipulating rather than measuring the presence or absence of such disclosures.

Second, because our investment professionals explicitly assess both CSR performance and financial performance (in counter-balanced order), and also indicate the extent to which they believe that CSR activities provide important societal benefits, we are able to isolate the incremental effect of each of these factors on their investment decisions. Third, because we use investment professionals as participants, we can examine how and why such individual experienced investment professionals respond to CSR disclosures rather than only how investors as a group respond as is done in capital market archival studies. Finally, we are able to examine whether and how investment professionals' personal beliefs and attitudes regarding a firm's CSR activities influence their recommendations to clients.

Our first hypothesis predicts that professional investors expect that good CSR performance increases a firm's financial performance and, therefore, that they expect better financial performance when a firm discloses positive CSR performance information than when no CSR performance is disclosed. Consistent with this prediction, a between-condition comparison finds that investment professionals assess financial performance to be higher when positive CSR performance is disclosed (CSR condition) than when it is not (No CSR condition), although this difference is only statistically significant for our German participants. However, using data only *within* the CSR condition, we find a positive and significant effect of investment professionals assessed CSR performance on assessed financial performance for both German and US investment professionals. While these within condition results show that both German and US investment professionals' assessments of CSR performance affect their assessments of financial performance, the difference in results *between* the CSR and No CSR conditions for the US and German participants suggests that US investment professionals require a higher *level* of assessed CSR performance before expecting a corresponding increase in financial performance.

Our second hypothesis predicts that investment professional's higher assessed CSR performance leads to more investment for two reasons, i.e., they believe that higher CSR performance increases financial performance and that higher CSR performance yields more societal

benefits. Thus, we expect more investment when a firm discloses positive CSR performance information than when it does not. Consistent with this prediction, a between-condition comparison finds that both German and US investment professionals invest more in the CSR condition than in the No CSR condition, although this difference is not significant for the total sample of US participants. However, when we split the US participants into subsets based on the extent to which they believe CSR activities provide important societal benefits, we find that those at or above the median invest significantly more when positive CSR information is disclosed than when it is not. The combined findings that this subgroup invests more but does not expect significantly higher financial performance when a firm discloses positive CSR performance is consistent with our prediction that factors other than expected financial performance affect the investment decisions of at least some portion of investment professionals. This issue is examined further in the tests of our final hypothesis.

Our final hypothesis predicts that investment professionals' assessment of CSR performance will positively affect their investment decisions beyond any expected financial effect because they value the societal benefits of CSR activities. We find support for this hypothesis for both German and US investment professionals. That is, using data from within the CSR condition, we find that for both groups, higher assessed CSR performance leads to higher investments through both an indirect path via expected financial performance and a direct path after controlling for expected financial performance.¹ Importantly, we show that this direct effect of assessed CSR performance on investment is driven by the value that investment professionals' place on the societal benefits associated with the firm's CSR activities. Moreover, this direct effect of assessed CSR performance on the amount of investment is significantly larger than the indirect effect operating through the effect of assessed CSR performance on financial performance.

¹ A possible additional explanation for investment professionals' use of CSR performance information in their investment decisions is their expectation regarding how other investors will respond to CSR performance information. As explained in our results section, we rule out this alternative explanation for our results by measuring and controlling for this possibility for our US participants.

Regarding our research question, we find that both our German and US investment professionals use disclosed CSR information in essentially the same way when making recommendations to clients as when making their own investment decisions, although the recommended investment amounts are slightly lower than the personal investment amounts. That is, both groups' investment decisions and recommendations to clients reflect their expectations regarding the effect of CSR performance on financial performance as well as their personal views regarding the societal benefits of CSR activities.

Overall, our findings expand our understanding of how investment professionals use CSR disclosures in their personal investment decisions and when acting as financial intermediaries for clients. Investment professionals use CSR disclosures to assess the firm's CSR performance, which in turn affects the amount they invest in the firm for two reasons. First, consistent with standard economic reasoning, on average, investment professionals expect better CSR performance to increase financial performance, which leads to more investment. However, and more importantly, beyond the expected effect on financial performance, investment professional's investment amounts are heavily influenced by the value they place on the societal benefits of a firm's CSR activities. Specifically, we show that the extent to which they believe that CSR activities provide important benefits for society represents an important predictor of how they use CSR disclosures in their personal investment decisions and when making recommendations to clients.

The findings described above inform the long-running academic debate regarding the link between CSR performance, financial performance, and investment. We provide clear evidence that the effect of perceived CSR performance on financial performance cannot fully explain investors' response to CSR performance. Rather, individual beliefs about the degree to which CSR activities provide important societal benefits also help explain investment decisions. Moreover, because such beliefs differ across individuals, countries, and/or cultures, identical financial and CSR performance disclosures can lead to different investment decisions. Consistent with

this perspective, although our results show that German and US investors react very similarly to *differences* within each group in how investors assess CSR performance, we also provide evidence that disclosure of identical CSR information can still lead to differences between the groups in investment *amounts*. These insights should help standard setters decide whether to require or encourage firms to disclose CSR information and also what types of disclosures might be most useful. Given how investment professionals use CSR disclosures, it would appear that investors would benefit from better information regarding how CSR performance affects financial performance and how a firm's CSR activities benefit society.

Our results also have potentially important implications for those who receive investment advice from investment professionals. Given our finding that investment professionals' use CSR information in the same way when making recommendations to their clients as when making their own personal investment decisions, those relying on investment professionals for investment recommendations should be aware that the advice they receive reflects such personal influences.

Finally, we extend the findings of Elliott, Jackson, Peecher and White (2014) by showing that their finding that *non-professional* investors' decisions are not affected by CSR disclosures when they are explicitly asked to first evaluate CSR performance does not necessarily hold for sophisticated investment *professionals*. We find that CSR disclosures influence investment professionals' investment decisions and recommendations whether they explicitly assess CSR performance before or after they make their investment decisions.

The next section develops our hypotheses and research questions; section 3 describes the method; section 4 reports our results; and section 5 concludes.

II. Theory and Development of Hypotheses and Research Question

As suggested earlier, positive CSR performance could potentially provide financial benefits for firms. For example, CSR activities appear to help attract and retain superior employees (Balakrishnan, Sprinkle, and Williamson 2011), increase employee effort by boosting employee morale (Bhattacharya, Sen, and Korschun 2008), increase customer satisfaction and revenue (Lev, Petrovits, and Radhakrishnan 2010), lower energy costs (Rangan, Chase, and Karim 2015), reduce the risk of negative publicity or government regulation (Paine 2000), lower the cost of capital (Dhaliwal, Li, Tsang, and Yang 2011; El Ghouli, Guedhami, Kwok, and Mishra 2011; Cheng, Ioannou, and Serafeim 2014; Goss and Robert 2011), represent a strategic competitive advantage (Porter and Kramer 2011), or provide a way for firms to signal stronger future financial performance (Lys, Naughton, and Wang 2015).

Of course, even if CSR activities are associated with financial benefits for the firm, this does not ensure that engaging in such activities will necessarily result in increased financial performance because the cost of such activities could outweigh the financial benefits. Further, investors may believe that there are (are not) financial benefits for the firm irrespective of whether such net financial benefits actually exist. That is, perceptions may not correspond with reality. Many studies have tested for an overall connection between CSR performance and financial performance. While the empirical evidence is mixed, the more recent meta-analyses of such work conclude that there is likely a small positive effect of CSR performance on financial performance (Brooks and Oikonomou 2018; Lu and Taylor 2016; Friede et al. 2015; Margolis et al. 2009; Orlitzky et al. 2003). Based on this prior research, we expect investment professionals to believe that better CSR performance increases a firm's financial performance. Consequently, we predict that when a firm discloses positive CSR performance information, investment professionals assess financial performance higher than when no CSR information is provided.

Thus, our first hypothesis is:

H1: Investment professionals assess financial performance higher when a firm discloses positive CSR performance information than when no CSR information is provided.

There are two reasons to expect the disclosure of positive CSR performance information to increase investment professionals' willingness to invest. First, if investment professionals expect positive CSR performance to result in better financial performance (as predicted in H1), standard economic reasoning suggests that their investment decisions would also be positively affected by positive CSR performance information. That is, if positive CSR performance information increases investment professionals' expectations regarding financial performance, and expected financial performance, in turn, affects their investment decisions, we would expect to see a positive link between assessed CSR performance and investment amounts mediated by the assessed financial performance.

Second, investment professionals may be more willing to invest in firms that disclose positive CSR performance for reasons beyond the effect of positive CSR information on expected financial performance. The substantial and growing interest in socially responsible investing indicates that an increasing number of investors may value the societal benefits associated with a firm's CSR activities rather than basing their investment decisions solely on expected financial performance. The Global Sustainable Investment Alliance (2016) recently reported that approximately \$12 trillion in assets were invested using socially responsible strategies in Europe and \$8.7 trillion were invested using such strategies in the United States. Recent academic research also suggests that investment decisions may reflect the value investors place on the societal benefits of a firm's CSR activities. For example, Martin and Moser (2016) provide experimental evidence that *non-professional* investors pay more for the stock of a company that makes and discloses an investment to reduce carbon emissions even though this investment lowers firm profit. Likewise, Renneboog, Horst, and Zhang (2008) review the socially respon-

sible investing (SRI) literature and conclude that “the existing studies hint but do not unequivocally demonstrate that SRI investors are willing to accept suboptimal financial performance to pursue social or ethical objectives.”

Based on the reasoning and prior research described above, we expect that a higher assessment of CSR performance leads to higher investment. Consequently, when a firm discloses positive CSR performance information, investors will invest more than when no CSR information is disclosed. We formally state this second hypothesis as:

H2: Investment professionals are more willing to invest when a firm discloses positive CSR performance information than when it does not disclose CSR information.

If investment professionals’ investment decisions reflect the value they place on the societal benefits associated with a firm’s disclosed CSR activities (as suggested in the development of H2), there will be an incremental effect of CSR performance information on investment professionals’ willingness to invest after controlling for any perceived effect of CSR performance on financial performance. Recent academic research suggests that the general investor population may indeed make investment decisions based on factors outside of the typical economic framework such as moral and ethical considerations and social preferences (e.g., Lewis and Mackenzie 2000; Lewis 2001; Glac 2009; Renneboog et al. 2008; Riedl and Smeets 2017).²

Although there is some prior evidence that *non-professional* investors use CSR information in their investment decisions because they value the associated societal benefits, it is unclear whether such findings extend to experienced investment professionals. It is possible that investment professionals’ experience could make them less likely than non-professional investors to base their decisions on considerations other than financial performance. However, based on the preponderance of the prior evidence, we expect that a substantial portion of investment professionals will consider CSR performance when making investment decisions because they

² Cf. also Huang and Watson (2015) for a related discussion and Friedman and Heinle (2016) for an analytical model assuming that social preference matter.

value the societal benefits of CSR activities beyond any effect on financial performance. This leads to our third hypotheses:

H3: Investment professionals' assessments of CSR performance will positively affect their willingness to invest beyond any perceived effect on financial performance.

Investment professionals often act as financial intermediaries who make recommendations to clients (e.g. investment advisors or analysts) or invest directly on clients' behalf (e.g. fund managers). Thus, an important question is whether their investment recommendations to clients are the same or different from their personal investment decisions. The answer to this question likely depends on the reason(s) why investment professionals use CSR information when making personal investment decisions.

Specifically, if investment professionals are personally more willing to invest when a firm discloses positive CSR performance because they believe a firm's CSR activities improve its financial performance, it is likely that they would make recommendations to clients similar to their own personal investment decisions. However, if investment professionals are personally willing to invest in firms with positive CSR performance because they value the societal benefits of CSR activities beyond any impact on financial performance, it is unclear whether they would be willing to make recommendations that are consistent with their personal investment decisions. On the one hand, their fiduciary responsibility to their clients could make them less willing to recommend investments based on their personal attitudes regarding the societal benefits of CSR activities. On the other hand, prior research in psychology suggests that individuals are often more willing to commit others to a cause for the common good than they are to commit themselves (Pronin, Olivola, and Kennedy 2008). Thus, we investigate the following research question:

RQ: When a firm discloses positive CSR information, do financial intermediaries make investment recommendations to clients that are consistent with, or different from, their personal investment decisions?

III. Method

Participants

Our participants are 81 members of an association of German investment professionals³ and 87 US investment professionals who are alumni of a large US public university business school. Potential German participants were pre-selected by the association according to their occupation. Potential US participants were prescreened to be investment professionals by the alumni office and contacted in advance about their willingness to participate in a research study without being informed about the purpose or any details of the study. Only participants who indicated their willingness to participate in the study received a follow-up invitation. Potential participants were then solicited via email sent by the association (German participants) or one of the researchers on behalf of the alumni organization (US participants).⁴ Table 1 provides information about our participants.

As shown in Panel A of Table 1, 90 German investment professionals and 89 US investment professionals completed the experiment.⁵ Nine German participants and two US participants are excluded from our final data set because they either never reviewed any of the information provided about the firm or did not review such information until after they had indicated their willingness to invest and their recommendation to a client (three participants). The remaining 81 German investment professionals and 87 US investment professionals are included in our final data set. These participants are affiliated with many different financial firms and thus they

³ While this association may have German-speaking non-German members (e.g. from Austria or Switzerland), we refer to our sample as German because only four participants did not answer that their nationality was German.

⁴ In Germany, the email was sent to 1,285 email addresses. However, some of these email addresses were outdated and some members have more than one email address. Because 90 investment professionals completed our experiment, a very conservative estimate of our response rate is 7.0 percent (90/1285). In the US, the email was sent out to 679 email addresses. As 89 investment professionals completed the experiment, the US response rate is 13.1 percent (89/679). The response rate is likely higher in the US than in Germany because the US participants were pre-contacted about their willingness to participate in the study.

⁵ Overall, 142 (127) participants accessed the specific instructions and therefore started the experiment in Germany (the US). 52 (38) of them did not finish the study. Excluding participants who dropped out because they appear to have misunderstood the technical instructions that they could not re-enter the experiment at a later point in time, the dropout rate of the experiment is 29.7 percent (25.2 percent) in Germany (the US) which is below the average dropout rate of online experiments of about 35% (Reips 2000). Importantly, drop-out rates are insignificantly different across conditions (χ^2 test, all p 's > .40).

represent a broad range of views regarding CSR rather than the views promoted by a small number of large financial firms.

Table 1: Sample Description

		German	US
<i>Panel A: Number of Participants</i>			
Study Completed	Total	n = 90	n = 89
	Financials only	n = 35	n = 32
	CSR	n = 55	n = 57
Participants Excluded	Total	n = 9	n = 2
	<i>Reason for exclusion</i>		
	No review of data at all	n = 6	n = 2
	Review of financial data only after answering willingness to invest questions	n = 3	
Final Sample	Total	n = 81	n = 87
	Financials only	n = 30	n = 32
	CSR	n = 51	n = 55
<i>Panel B: Participants by Occupation (Final Sample)</i>			
<i>Occupation</i>		%	%
Fund manager		30.86	34.48
Financial analyst		27.16	27.59
Investment advisor		20.99	24.14
Other type of analyst (fund analyst, credit analyst)		3.70	.00
Other (e.g., risk manager, product developer, product manager)		17.28	13.79
<i>Panel C: Participants' Experience in Investment Valuation (Final Sample)</i>			
<i>Years of Investment Valuation Experience</i>		%	%
Less than 5 years		22.22	29.88
5 to 9 years		23.46	42.53
10 to 14 years		13.58	18.40
15 to 19 years		7.41	2.30
20 to 24 years		11.11	2.30
25 years and more		22.22	4.60

Panel B of Table 1 classifies our participants by their position in their firm. Most German and US participants are fund managers (German = 31%; US = 34%), financial analysts (German = 27%; US = 28%), or investment advisors (German = 21%; US = 24%).⁶ Panel C of Table 1 shows that our investment professionals have substantial investment valuation experience. German participants have mean investment valuation experience of 13 years and mean overall experience of 18 years. US participants have mean investment valuation experience of 8 years and mean overall professional experience of 9 years. Thus, we view our investment professionals as appropriate participants to serve as professional personal investors and as financial intermediaries who make investment recommendations to clients. Finally, nine percent of our participants are female. There are no significant differences across our experimental conditions (described below) for experience in investment valuation, overall professional experience, nationality or gender (all p 's > .40).

Design

We use a 1x2 experimental design, manipulating the presence/absence of CSR information between participants, resulting in a No CSR condition and a CSR condition. In the No CSR condition, participants had access to financial information relevant for an investment decision. In the CSR condition, participants had access to the same financial information and additional information regarding the firm's CSR activities. We repeat our experimental design and procedures separately for our two participant groups of German and US investment professionals.⁷

⁶ Participants are classified based on the occupation they indicated on the post-experiment questionnaire. Participants indicating "other occupation" and providing details about their occupation are re-classified into another specific category when possible.

⁷ The experiment with German participants included an additional "picture" manipulation nested within the CSR condition that was not included in the experiment with US participants. Specifically, one-half of the German participants in the CSR condition were provided with a psychologically appealing picture related to each of the two broad categories of numerical CSR information provided to participants (environmental information and information about employees; details provided later), while the other half of German participants in the CSR condition received the numerical CSR information without any pictures. Because we found no significant effects of this picture manipulation on any of our variables of interest in the German data, we did not include this manipulation when collecting our US data. Given the lack of effect of our picture manipulation, we combine the German data with and without pictures into a single CSR condition and do not consider this manipulation further.

Overview of Experiment

In both the No CSR and CSR conditions, participants read background information about the firm and had access to financial performance data, while only the participants in the CSR condition had access to the CSR performance data. After reading the information participants had access to in their respective conditions, participants indicated the amount they would be willing to personally invest in the firm and the amount of investment they would recommend to a client. These amounts represent our primary dependent variables.

After collecting the primary dependent measures described above, participants responded to a series of questions designed to help us understand how participants' used CSR information when making their personal investment decisions or their investment recommendations to a client. Specifically, participants provided their assessment of 1) the firm's current and longer-term financial performance, 2) the firm's CSR performance (only participants in the CSR condition made this assessment as information regarding the firm's CSR activities is needed to make this assessment), and 3) the extent to which they believed that a firm's CSR activities provide important societal benefits. In addition, US participants indicated how they believed other stock market investors would respond to the disclosed CSR performance information. Finally, participants responded to several demographic questions. Next, we describe our experimental instrument and data collection procedures in more detail.

Detailed Procedures

When our investment professionals accessed the web-link in the message inviting them to participate, they were randomly assigned to one of our experimental conditions. The appendix contains the firm background and financial information provided to all participants in all conditions and the CSR information provided only to the participants in the CSR condition.

The background information describes Furniturama, a hypothetical manufacturer and retailer of furniture. Participants learn about the firm's market, products, input materials, supply chain, and a recent expansion of its product mix. Importantly, this background information does

not include any information about the firm's CSR activities or how such activities might relate to its products or financial performance. We did this to avoid confounding our manipulation of CSR information and because we suggest as part of our underlying theory that investors likely develop such connections themselves.

The financial information includes income statements, the three main categories from the cash flow statement, and some performance and capital structure ratios for a 3-year period, along with annual percentage changes. Participants were also told that the firm has a typical industry earnings multiple but were not given other stock market data as our main focus is on investment professionals' fundamental valuations of financial and CSR disclosures. Overall, the financial data reflect a slight increase in revenues over the last three years and a rather stable profit margin.

The CSR performance information includes numerical data for environmental and employee issues. Any effect of past CSR performance on current financial performance is already reflected in the financial information provided. As with the financial information, participants receive three years of CSR data and the annual percentage changes for each individual item. The CSR information also included the industry average and range for each item.⁸ To aid in processing, the disclosure indicates whether higher or lower numbers reflect more environmentally friendly or employee friendly performance. Overall, the CSR data indicate that performance in both CSR categories (environment and employees) improves over the 3-year period. In the first year, all CSR measures start at a level that is slightly better than the industry average. In subsequent years, performance improvements are such that two of the four measures in each broad CSR category reach the top 10 percent and the other two measures reach the top 20 percent in the industry if industry performance is equally distributed. Participants could freely choose to review the financial and CSR information at any point in the study after it was initially provided,

⁸ Information on industry average was included to provide a relevant benchmark for the firm's CSR activities. While CSR reports may not always include such information, we include it to proxy for the general knowledge of industry CSR performance that we believe investment professionals have in actual investment decision settings.

including when they were answering any subsequent questions. To ensure the relevance and realism of the financial and CSR performance information provided, we had three senior investment professionals with expertise in CSR who did not participate in the subsequent experiment review our materials. We made slight adjustments based on their feedback.

The experiment was administered online in order to gain access to the necessary participant pool of senior investment professionals as suggested by Harrison and List (2004). To decrease the likelihood of uncontrolled factors influencing our results (Charness, Harvy, and Sonsino 2007), we followed the recommendations of Reips (2000) for conducting online experiments. Specifically, we carefully controlled the pool of participants (Birnbaum 2004; Charness et al. 2007) by requiring participants to use a personal access code embedded in a web link leading to the experiment (Birnbaum 2004). The link prevented participants from entering the experiment more than once, thereby reducing the risk of sampling biases. As reported in our earlier footnote, the drop-out rate for our experiment is below the average drop-out rate for online experiments, reducing concerns about self-selection (Reips 2000).⁹

We assured the participants that their responses would be anonymous, and described the study in general terms to deter participants from forming implicit expectations when analyzing the information provided and giving their responses. The experimental instructions emphasized that participants should only start the experiment if they had sufficient time to complete it. In addition, the instructions emphasized that participants should complete the study alone and not talk to others while participating in the study or after they had participated.

⁹ We also used the early-late respondents' test to detect possible response bias (Armstrong and Overton 1977). An underlying assumption of this test is the similarity of late respondents and non-respondents such that a systematic non-response bias would become apparent by comparing late respondents to early respondents. We compared the earliest and latest one-third of responses for all our dependent and process variables and found no significant differences between early and late responses (all p 's > .40). We also compared the earliest and latest one-third of responses for the time invested in the experiment ($p = .655$), whether participants were interested in getting a report of the results ($p = .244$), and the type of reward requested, i.e., Amazon gift card versus donation ($p = .955$) and found no significant differences. These findings suggest that our data do not reflect any significant non-response bias.

We offered participants a report on the findings from our study and a payment for their participation. For the payment, participants could choose between an Amazon gift card for €35 (German participants) or \$35 (US participants), or a donation to one of three charities (a foundation fighting cancer, a foundation fighting hunger and poverty, and a research institution) for the same amount. The organizations to which the donation could be made were not disclosed until the end of the experiment to prevent participants from deciding whether to participate based on their preferences for specific charities.

Measures

Our primary dependent variables are the amount that participants indicated they were willing to invest in the firm and the amount they indicated that they would recommend as an investment to a client. The questions used to collect these measures are shown in Panel A of Table 2. In addition, we collect two important measures we expect to help to understand the investors' reasoning: participants' assessment of the firms' financial performance and their assessment of the firm's CSR performance. The questions used to collect these measures are shown in Panels B and C of Table 2, respectively. As can be seen in Panel B, participants assessed both the firms' current and long-term financial performance. As can be seen in Panel C, participants assessed the firm's performance on both environmental and employee issues, as well as the firm's overall performance on environmental and employee issues combined. We also collect a critical expected moderator of our main predictions. Specifically, participants indicate the degree to which they believe firms' CSR activities provide important societal benefits in general. The questions used to collect this measure are shown in Panel D of Table 2. For the US sample, we also measured participants' beliefs regarding the effect of the firm's CSR activities on other investors' decisions to invest. The questions to collect this measure are shown in Panel E of Table 2.

Table 2: Measurement of Key Measures

Panel A: Willingness to Invest

INV _{PERSONAL}	Assume that you have decided to invest 5% of <u>your personal investment portfolio</u> [i.e., 10,000 € (\$)] in the furniture industry. How much of this 10,000 € (\$) amount would you be willing to invest in Furniturama? [in ,000 € (\$)]
INV _{CLIENT}	Assume that <u>you have a client</u> who has decided to invest 5% of <u>his/her investment portfolio</u> [i.e., 10,000 € (\$)] in the furniture industry. How much of this 10,000 € (\$) amount would you advise your client to invest in Furniturama? [in ,000 € (\$)]

Panel B: Financial Performance

FINPERF _{CUR}	How do you evaluate Furniturama's <u>current</u> financial performance? [Scale from -5 (very bad) over 0 (average) to 5 (very good)]
FINPERF _{LT}	How do you evaluate Furniturama's <u>longer-term future</u> financial performance? [Scale from -5 (very bad) over 0 (average) to 5 (very good)]

Panel C: CSR Performance

ENVPERF	How do you evaluate Furniturama's performance on <u>environmental</u> issues? [Scale from -5 (very bad) over 0 (average) to 5 (very good)]
EMPPERF	How do you evaluate Furniturama's performance on <u>employee</u> issues? [Scale from -5 (very bad) over 0 (average) to 5 (very good)]
CSRPERF	How do you evaluate Furniturama's <u>overall performance</u> on <u>environmental and employee issues combined</u> ? [Scale from -5 (very bad) over 0 (average) to 5 (very good)]

Panel D: Societal Benefits

Please indicate how strongly you agree with each of the following statements.

SOCBEN _{ENV}	A firm's actions to improve <u>its impact on the environment</u> provide important societal benefits. [Scale from -5 (strongly disagree) over 0 (neither agree nor disagree) to 5 (strongly agree)]
SOCBEN _{EMP}	A firm's actions to improve <u>employees' working conditions throughout its supply chain</u> provide important societal benefits. [Scale from -5 (strongly disagree) over 0 (neither agree nor disagree) to 5 (strongly agree)]

Panel E: Expectation of Others' Investments

OTHERINV _{ENV}	Please indicate how you believe Furniturama's actions to improve <u>its impact on the environment</u> would affect <u>other investors' decisions to invest</u> in Furniturama. [Scale from -5 (very negatively) over 0 (no effect) to 5 (very positively)]
OTHERINV _{EMP}	Please indicate how you believe Furniturama's actions to improve <u>employees' working conditions throughout its supply chain</u> would affect <u>other investors' decisions to invest</u> in Furniturama. [Scale from -5 (very negatively) over 0 (no effect) to 5 (very positively)]

Finally, because Elliott et al. (2014) provide evidence that explicitly assessing CSR performance before making their valuation judgments negated the effect of positive CSR information on *non-professional* investors' valuations judgments we counterbalanced the order in which our investment professionals made their investment decisions and recommendations (Panel A of Table 2) and assessed the firms' CSR performance (Panel C of Table 2). Specifically, approximately half of our participants in the CSR condition made their investment and recommendation decisions first, then assessed financial performance next, and finally assessed CSR performance last. The other half of participants in the CSR condition assessed CSR performance first, then made their investment and recommendation decisions next, and finally assessed financial performance last.

IV. Results

Overview of Descriptive Data

Before providing formal tests of our hypothesis, we provide descriptive data and note some important patterns in our results. Table 3 provides means, medians, and standard deviations for the key measures we use in our analysis.

Table 3: Descriptive Statistics (Mean, Median, [Standard Deviation]) **and Observations for Key Measures**

	German Investors		US Investors	
	No CSR	CSR	No CSR	CSR
INV _{PERSONAL} ^a	3.07	3.96	2.73	3.08
	3.00	3.50	2.75	3.00
	[2.00]	[2.44]	[1.80]	[2.16]
INV _{CLIENT} ^b	2.93	3.62	2.66	2.88
	2.75	3.00	2.75	2.50
	[1.99]	[2.30]	[1.79]	[1.93]
FINPERF _{CUR} ^c	1.17	2.16	1.28	1.51
	2.00	3.00	1.00	2.00
	[1.78]	[1.49]	[1.63]	[1.73]
FINPERF _{LT} ^d	.40	1.27	.00	.16
	.00	1.00	.50	.00
	[1.71]	[1.70]	[2.27]	[1.97]

FINPERF ^e	.78 1.25 [1.55]	1.72 1.50 [1.43]	.64 1.25 [1.81]	.84 1.00 [1.51]
CSRPERF ^f	N/A N/A [N/A]	3.06 3.00 [1.36]	N/A N/A [N/A]	3.24 3.00 [1.25]
SOCBEN ^g	3.17 3.00 [1.46]	3.47 4.00 [1.50]	3.06 3.00 [1.49]	3.41 4.00 [1.64]
OTHERINV ^h	N/A N/A [N/A]	N/A N/A [N/A]	N/A N/A [N/A]	.97 1.00 [1.07]
Number of Observations	30	51	32	55

Notes:

^a INV_{PERSONAL}: Amount [in '000 € (\$)] of 10,000 € (\$) investors are willing to invest in Furniturama for their own personal investment portfolio.

^b INV_{CLIENT}: Amount [in '000 € (\$)] of 10,000 € (\$) investors would advise a client to invest in Furniturama.

^c FINPERF_{CUR}: Evaluation of Furniturama's current financial performance [scale from -5 to 5].

^d FINPERF_{LT}: Evaluation of Furniturama's longer-term future financial performance [scale from -5 to 5].

^e FINPERF: Financial performance, calculated as the mean of current and future financial performance.

^f CSRPERF: Furniturama's performance on environmental and employee issues combined [scale from -5 to 5].

^g SOCBEN: Assessment of whether a firm's actions to improve its impact on environment and employee working conditions provide important societal benefits, calculated as the mean of two questions.

^h OTHERINV: Assessment of the effect of Furniturama's actions related to environmental and employee issues on other investors' investment decisions.

As indicated above, Elliott et al. (2014) find that when unsophisticated investors explicitly assess CSR performance before making valuation judgments the positive relation between CSR performance and valuation judgments they documented earlier no longer holds. Thus, in a first step, we test whether this is the case for our sophisticated investment professionals and regress their personal investment amounts (INV_{PERSONAL}), on their assessment of CSR performance (CSRPERF), a mean-centered indicator variable for Order (indicating whether CSR performance was assessed before or after determining the investment amount) and the interaction between CSRPERF and Order separately for our German and US participants. We find no evidence in either sample that assessing CSR performance before making the investment decision reduces the effect of our investment professionals' CSR assessment on their personal investment amounts. Specifically, the effect of CSRPERF on INV_{PERSONAL} is positive and significant

(p 's < .01 in both cases), while neither interaction is significant (both p 's > .30).¹⁰ Thus, we do not consider Order further in our analysis and continue reporting the descriptive statistics of our key measures.

Consistent with the positive CSR information used in our experiment, Table 3 shows that our investment professionals' mean assessment of the firm's overall CSR performance, CSRPERF, is positive (German = 3.06, US = 3.24, on a scale from -5 to +5). Also, consistent with H1, which predicts that investment professionals assess a firm's financial performance higher when positive CSR performance is disclosed than when it is not, Table 3 shows that FINPERF is higher in the CSR condition than in the No CSR condition for both German participants (1.72 vs. .78, a difference of 120 percent) and US participants (.84 vs. .64, a difference of 31 percent). However, the difference appears larger for German than for US participants.

Consistent with H2, which predicts that personal investments amounts are higher when positive CSR information is disclosed than when it is not, Table 3 shows that this pattern holds for both our German participants (3.96 vs. 3.07, a difference of 29 percent) and US participants (3.08 vs. 2.73, a difference of 13 percent), although the difference again appears larger for German participants than for US participants. Data patterns related to H3 will be discussed later in conjunction with the related formal statistical tests.

Finally, Table 3 provides initial evidence regarding RQ1, which asks how investment professionals' personal investment decisions compare to their recommendations to clients. Participants' mean investment amount recommended to clients (INV_{CLIENT}) is higher when CSR information is provided than when it is not for both German participants (3.62 vs. 2.93, a difference of 23 percent) and US participants (2.88 vs. 2.66, a difference of 8 percent). Again, the difference in investment amounts recommended to clients appear larger for the German participants than

¹⁰ We do not find any significant order effects on CSRPERF, FINPERF, INV_{PERSONAL}, or INV_{CLIENT} (t-tests, all p 's > .20). In addition, we also run the same regressions with the recommended investment amounts, INV_{CLIENT}, as the dependent measure for both the German and US participants and find the same result as when using INV_{PERSONAL} as the dependent variable (both interactions: p 's > .40; CSRPER: p 's < .01).

for the US participants and the mean recommended investment amounts appear slightly lower than the personal investment amounts for both groups of participants.

Tests of H1

H1 predicts that investment professionals assess higher financial performance when a firm discloses positive CSR performance information than when it does not. To test H1, we compare FINPERF for the CSR condition versus the No CSR condition. The t-test results are reported in Panel A of Table 4.

Table 4: Means and t-Tests for Financial Performance Assessment and Measures of the Willingness to Invest

<i>Panel A: FINPERF</i>		No CSR	CSR
<i>German investors:</i>	Means	.78	1.72
	t-test	t= 2.7465, p= .004***	
<i>US investors:</i>	Means	.64	.84
	t-test	t= .5143, p= .307	
<hr/>			
<i>Panel B: INV_{PERSONAL}</i>			
<i>German investors:</i>	Means	3.07	3.96
	t-test	t= 1.7868, p= .039**	
<i>US investors:</i>	Means	2.73	3.08
	t-test	t= .7692, p= .222	
<hr/>			
<i>Panel C: INV_{PERSONAL} for Investors with above Median Belief in Societal Benefits of CSR</i>			
<i>German investors:</i>	Means	3.61	4.68
	t-test	t= 1.4017, p= .084*	
<i>US investors:</i>	Means	2.43	3.38
	t-test	t= 1.4001, p= .086*	
<hr/>			
<i>Panel D: INV_{CLIENT}</i>			
<i>German investors:</i>	Means	2.93	3.62
	t-test	t= 1.3558, p= .089*	
<i>US investors:</i>	Means	2.66	2.88
	t-test	t= .5403, p= .295	

Note: ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

German investment professionals assess a significantly higher financial performance when positive CSR information is disclosed than when no CSR information is disclosed (1.72 vs. .78, $p = .004$). US investment professionals also assess directionally higher financial performance when positive CSR performance is reported, but the difference between conditions is not significant (.64 vs. .84, $p = .307$).

In addition to the *between*-conditions test reported above, we also examine whether *within* the CSR information condition, investment professionals who assess a higher CSR performance also assess a higher financial performance by regressing FINPERF on CSRPERF separately for German and US participants. The results are reported in Table 5.

Table 5: Effect of CSR Performance Assessment on Financial Performance Assessment

Dependent Variable: FINPERF	German Investors	US Investors
	Coefficient (Robust Standard Error)	
Constant	.9626 (.4870)*	.1373 (.4405)
CSRPERF	.2462 (.1456)**	.2160 (.1233)**
R^2	.06	.03
N	51	55

Note: ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

CSRPERF and FINPERF are positively related for both German and US investment professionals (German: .25, $p = .048$, US: .22, $p = .043$), showing that, within the CSR condition, both groups perceive a positive relation between CSR performance and financial performance. However, while the coefficients for the German and US investment professionals are quite similar, the regression constants, which represents the estimated financial performance when CSRPERF equals *zero*, appear to be different (German = .96 vs. US = .14), although the difference is just shy of statistical significance at conventional levels ($\chi^2 = 1.52$, $p = .109$). This may help explain why we observe statistically significant between-condition differences in FINPERF

for German participants but not for US participants. We examine this issue further by substituting the median assessment of CSRPERF of 3 into the regressions. This yields an estimated value of 1.72 ($.97 + 3 \times .25$) for the German investors but only .80 ($.14 + 3 \times .22$) for US investors. Thus, while German and US investment professionals assess *differences* in financial performance relative to *differences* in their assessment of CSR performances, US investors appear to require a higher *level* of assessed CSR performance to assess a positive effect of disclosed CSR performance on financial performance compared to no disclosure. To summarize, we find support for H1 for our German participants but only directional support for our US participants.

Tests of H2

H2 predicts that investment professionals are more willing to invest when a firm discloses positive CSR performance information than when no CSR performance information is disclosed. To test H2, we compare $INV_{PERSONAL}$ for the CSR condition versus the No CSR condition separately for the German and US participants. The t-test results are reported in Panel B of Table 4. Consistent with H2, investment amounts for German participants are significantly higher when positive CSR information is disclosed than when it is not (3.96 vs. 3.07, $t = 1.79$, $p = .039$). In contrast, while directionally consistent with H2, investment amounts for US participants are not significantly different between the CSR and No CSR conditions (3.08 vs. 2.73, $t = .77$, $p = .222$).

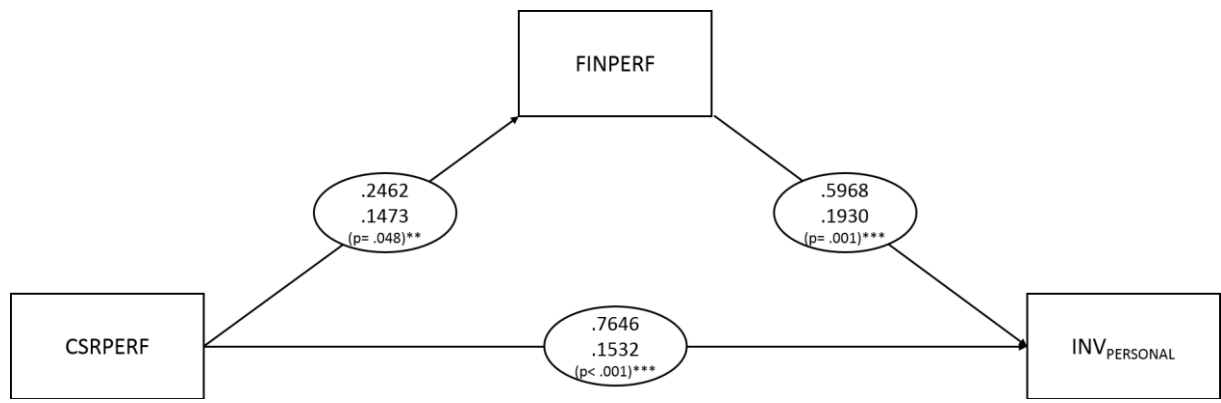
Because we predict that beliefs regarding the societal benefits of CSR activities are an important predictor of investment behavior, we repeat the test reported above using only participants whose beliefs in the societal benefits of CSR activities (SOCBEN) are at or above the median. The results, which are reported in Panel C of Table 4, show that despite reduced statistical power due to reduced sample size, $INV_{PERSONAL}$ is significantly higher in the CSR condition than the No CSR condition for both the German (4.68 vs. 3.61, $p = .084$) and the US (3.38 vs. 2.43, $p = .086$) participants. Thus, we find support for H2 for our German participants and moderate support for H2 for our US participants.

For consistency between our tests of H1 and H2, we repeat the t-tests conducted for H1 with FINPERF as the dependent variable using only those participants with above median beliefs regarding the societal benefits of CSR activities. Untabulated results continue to show significantly higher assessment of financial performance in the CSR versus No CSR condition for German participants (2.00 vs. .82, $p = .004$), but no significant difference for US participants (.87 vs. .50, $p = .238$). Thus, although US participants with higher beliefs in the importance of the societal benefits of CSR activities do not assess statistically significantly higher financial performance when positive CSR information is disclosed than when it is not, they nevertheless do invest more when positive CSR information is disclosed than when it is not. This suggests that US investment professionals value the societal benefits of CSR activities beyond any expected financial effect as hypothesized in H3, which we test next.

Tests of H3

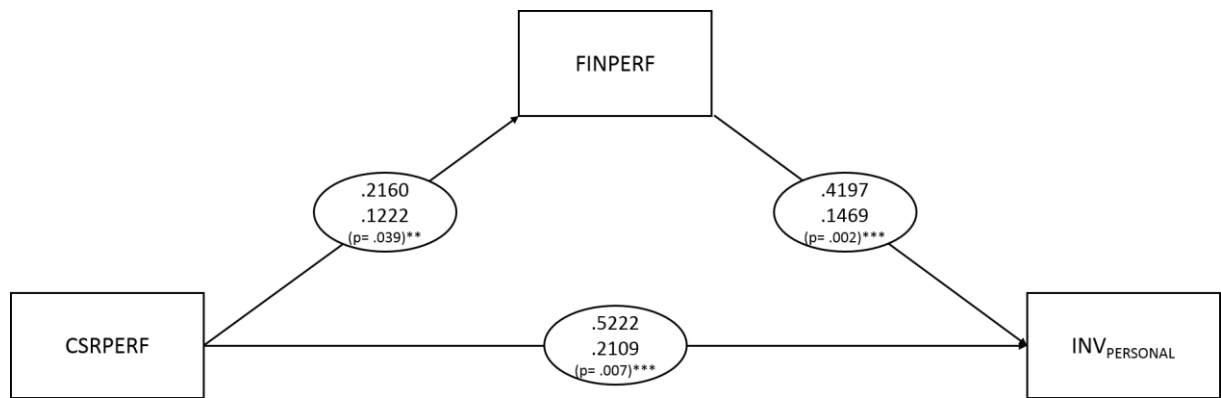
H3 predicts that the degree to which investment professionals value the societal benefits of CSR activities can drive their investment decisions beyond any expected effect of CSR performance on financial performance. Because CSR performance assessments, financial performance assessments, and investment amounts are closely interrelated, we test H3 using a covariance-based structural equation model (SEM) with a heteroscedasticity-robust estimator for standard errors. For the tests of H3, we use data from the CSR conditions ($n=51$ for the German sample, $n=55$ for the US sample) only. The initial SEM results for both samples are reported in Figure 1.

Figure 1: Path Model on the Effect of the CSR Performance Assessment on Investors' Personal Willingness to Invest
Panel A: German Investors



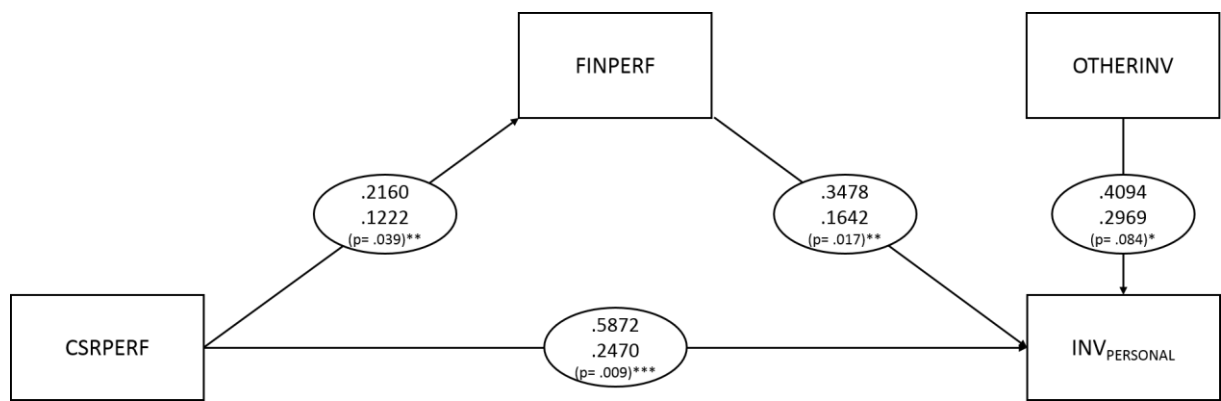
Note: N=51, CD = .259.

Panel B: US Investors



Note: N=55, CD = .129.

Panel C: US Investors with Control for Others' Investment Behavior



Notes: N=55, CD = .178.

The path models are estimated using a covariance-based structural equation model with heteroscedasticity-robust standard errors. ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

CSRPERF: Furniturama's performance on environmental and employee issues combined [scale from -5 to 5].

FINPERF: Financial performance, calculated as the mean of current and future financial performance [on a scale from -5 to 5].

INV_PERSONAL: Amount [in '000 € (\$)] of 10,000 € (\$) investors are willing to invest in Furniturama for their own personal investment portfolio.

OTHERINV: Assessment of the effect of Furniturama's actions related to environmental and employee issues on other investors' investment decisions, calculated as the mean of two questions [scale from -5 to 5].

Figure 1 confirms our within-condition findings for H1 by again documenting a significantly positive relation between CSRPERF and FINPERF for both German (Panel A: .25, $p = .048$) and US investment professionals (Panel B: .22, $p = .039$). Consistent with H3, Figure 1 shows that even after controlling for the significantly positive effect of FINPERF on INV_{PERSONAL}, there is a significantly positive effect of CSRPERF on INV_{PERSONAL} for both German (Panel A: .76, $p < .001$) and US (Panel B: .52, $p = .007$) participants. These results are consistent with the development of H3, which suggests that investment professionals value the societal benefits of CSR activities beyond any expected effect of the CSR activities on financial performance. We note also that this direct effect of assessed CSR performance on INV_{PERSONAL} is significantly larger than the indirect effect operating through financial performance for both the German (.765 vs $.246 \times .597 = .147$, $z = 3.39$, $p = .001$) and US (.522 vs $.216 \times .420 = .091$, $z = 1.93$, $p = .053$) participants. Below we provide further, more direct, evidence that this direct effect is explained by the value that our investment professionals place on the societal benefits of the disclosed CSR performance.

However, before moving to this more direct evidence, we first provide evidence that the significantly positive direct path between CSRPERF and INV_{PERSONAL} is not explained by participants' expectations regarding how other investors' will react to the disclosed CSR information. We do so by including OTHERINV as a control variable in the analysis of our US participants (see Table 2, Panel E for the question used to collect this variable).¹¹ As shown in Panel C of Figure 1, OTHERINV is positive and marginally significant (.41, $p = .084$), indicating that, as would be expected, professional investors invest more when they expect the stock price to increase because they expect others to invest more. However, for our study, the more important finding is that even after controlling for the expectations regarding other investors expected reactions to the disclosed CSR information, the paths from CSRPERF to both

¹¹ We only collected this variable from the US participants and can, therefore, only include it as a control variable when analyzing the US data.

FINPERF (.22, $p = .039$) and to $INV_{PERSONAL}$ (.59, $p = .009$) remain significantly positive. That is, all of our previously reported results for US investment professionals are robust to controlling for how they expect other investors to react to the CSR information. Thus, our results provide strong support for H3.

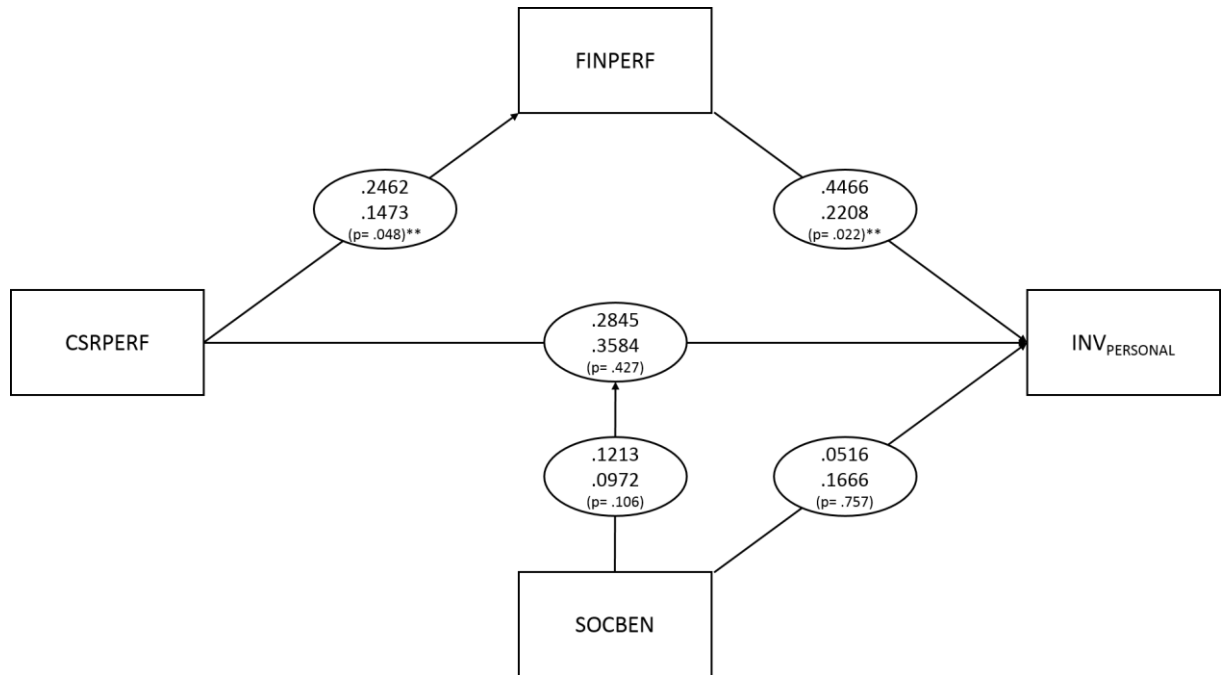
To provide more direct evidence that the value investment professionals place on the societal benefits of the firm's CSR performance explains the direct effect of CSRPERF on $INV_{PERSONAL}$ after controlling for FINPERF, we test whether SOCBEN moderates this direct path (SOCBEN is the mean of the responses to the two questions shown in Table 2, Panel D). The results are reported in Figure 2.

As Figure 2 shows, SOCBEN positively moderates the direct path from CSRPERF to $INV_{PERSONAL}$ for both the German (Panel A) and US (Panel B) investment professionals and significantly so for the US participants (.33, $p = .002$). Although the results for the German sample are directionally consistent, they are slightly below the conventional level for marginal significance (.12, $p = .106$). Importantly, when SOCBEN is included as a moderator, the direct effect of CSRPERF on $INV_{PERSONAL}$ becomes insignificant for both the German (Figure 2, Panel A: .28, $p = .427$) and US (Figure 2, Panel B: -.45, $p = .269$) participants.

This means that, *when SOCBEN equals zero*, i.e., a participant believes that CSR activities have *neither positive nor negative societal effects*, the assessment of CSR performance has no significant effect on the amount of investment beyond any financial performance effect. This result provides direct support for our interpretation that the effect of CSR performance assessments on investment amounts beyond any expected financial effect reflects the value our investment professionals place on the societal benefits associated with the company's CSR activities.

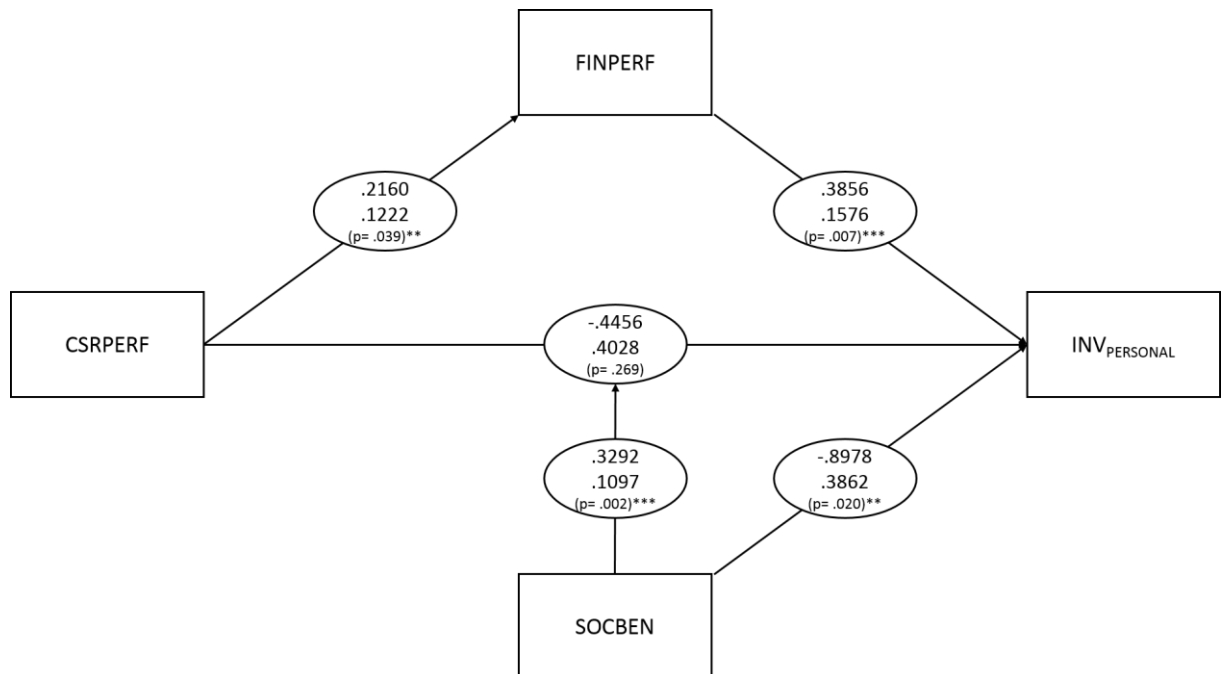
Figure 2: Investment Professional Beliefs' in the Societal Benefits as Moderator for the Effect of the CSR Performance Assessment on Investors' Personal Willingness to Invest

Panel A: German Investors



Notes: N=51. Fit statistics: $\chi^2 = 10.567$ (p = .005); Comparative Fit Index = .936; Tucker Lewis Index = .713; SRMR = .098.

Panel B: US Investors



Notes: N=55. Fit statistics: $\chi^2 = 1.358$ (p = .507); Comparative Fit Index = 1.000; Tucker Lewis Index = 1.018; SRMR = .051.

The path models are estimated using a covariance-based structural equation model with heteroscedasticity-robust standard errors. ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

SOC BEN: Assessment of whether a firm's actions to improve its impact on environment and employee working conditions provide important societal benefits, calculated as the mean of two questions.

Tests of RQ1

RQ1 asks whether investment professionals' recommendations to clients are consistent with or different from their personal investment decisions. Table 4 (Panel D) reports results of the t-tests for the CSR versus No CSR conditions using INV_{CLIENT} as the dependent variable. The results for both the German and US participants are very similar to those using personal investment amounts. Specifically, INV_{CLIENT} is higher when positive CSR information is provided in both samples but only significantly so for German investors (German: 3.62 vs. 2.93, $t = 1.36$, $p = .089$; US: 2.88 vs. 2.66, $t = .54$, $p = .295$).

Figure 3 reports both the basic model (Panel A) and the extended model (Panel B) used to test H3 for both the German and US participants using INV_{CLIENT} as the dependent variable rather than $INV_{PERSONAL}$.

As shown in Panel A, all findings for INV_{CLIENT} from the basic model are consistent with those for $INV_{PERSONAL}$. Specifically, for both the German and US participants, there is a significantly positive effect of $CSRPERF$ on both $FINPERF$ (German: .25, $p = .048$, US: .22, $p = .039$) and on INV_{CLIENT} after controlling for $FINPERF$ (German: .73, $p < .001$, US: .42, $p = .024$). These results are consistent with the results for participants' personal investment amounts, indicating that our investment professionals consider the same factors when making investment recommendations to clients as they do when making their personal investment decisions.

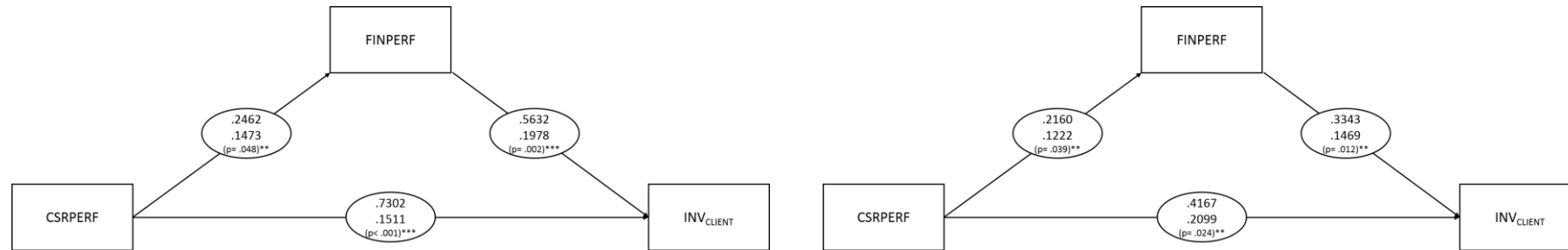
The findings reported in Panel B are also consistent with our prior findings for $INV_{PERSONAL}$. That is, $SOCBEN$ has a significant moderating effect on the relationship between $CSRPERF$ and INV_{CLIENT} for both our German (.16, $p = .049$) and US participants (.27, $p < .001$). These results provide evidence that investors' beliefs in the societal benefits of CSR activities can affect their investment recommendations to their clients in the same manner as they affect their personal investment decisions.

Figure 3: Path Model on the Effect of the CSR Performance Assessment on Investment Professionals' Recommendations to their Clients

German Investors

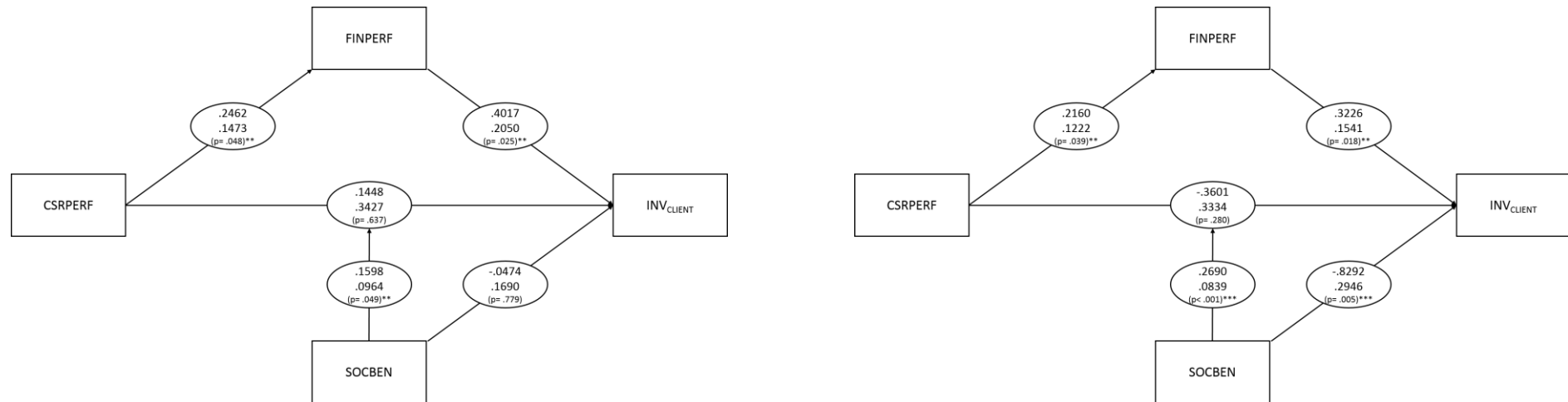
US Investors

Panel A: Basic Model



Notes: German investors: CD = .265; US investors: CD = .107.

Panel B: Extended Model



Notes: German investors: $\chi^2 = 10.567$ ($p = .005$); Comparative Fit Index = .936; Tucker Lewis Index = .713; SRMR = .098. US investors: $\chi^2 = 1.358$ ($p = .507$); Comparative Fit Index = 1.000; Tucker Lewis Index = 1.019; SRMR = .051. Observations include all participants from the positive CSR performance information present conditions (N=51 for German investors (Panel A), N=55 for US investors (Panel B)). Positive CSR performance information is manipulated by disclosing information about the firm's positive CSR performance together with financial performance information.

The path models are estimated using a covariance-based structural equation model with heteroscedasticity-robust standard errors. ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

INV_{CLIENT}: Amount [in '000 € (\$)] of 10,000 € (\$) investors would advise a client to invest in Furniturama.

Taken together these results show that the disclosure of positive CSR information affects the investment amounts investment professionals recommend to clients in the same way and for the same reasons as such information affects investment professionals' personal investment amounts. That is, positive CSR performance disclosures make investment professionals both more likely to personally invest and more likely to recommend investment to clients. Moreover, these investment and recommendation decisions are made both because the investment professionals believe that positive CSR performance leads to better financial performance and because they value the societal benefits of the CSR activities beyond any expected financial effects.

Supplemental Analyses

German vs. US Investment Professionals

The analyses reported thus far show that *within* the CSR condition, German and US investment professionals respond very similarly to disclosed positive CSR performance information. However, from prior results it appears that US investment professionals seem to require a higher *level* of CSR performance than German professionals before they expect a corresponding increase in financial performance in the CSR versus No CSR conditions. Thus, US investment professionals seem somewhat more hesitant than German investment professionals as to *level* of CSR performance that is necessary to increase financial performance.

Regarding the reasoning *within* the CSR information condition the fit statistics of the extended path model (Figure 2) suggest that there might an additional difference between the two samples. Specifically, the fit statistics of the model for the German participants displayed in Figure 2 are below the usual acceptable thresholds while all fit statistics for the US participants exceed these thresholds (Byrne 2001; Hu and Bentler 1999). Therefore, we also explore whether investment professionals' beliefs about the societal benefits of CSR activities affect the link between CSR performance and financial performance assessments. This link could be affected if our investment professionals engaged in motivated reasoning.

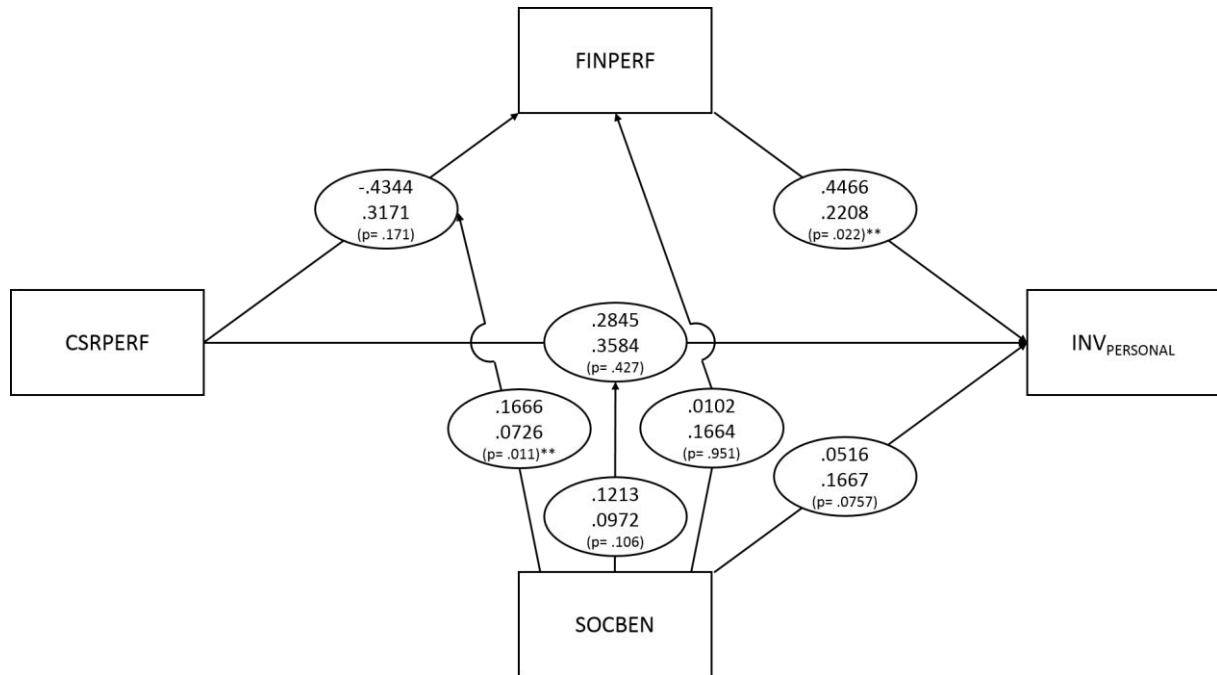
Motivated reasoning is the tendency of individuals to access, process or evaluate information in biased ways based on their own motivations (Kunda 1990). Hales (2007) provides evidence that motivated reasoning can affect the evaluation of disclosed financial information. In our case, investment professionals who believe CSR activities provide more societal benefits may be more likely to also believe that positive CSR performance results in *better* financial performance, while investment professionals who do *not* believe CSR activities have societal benefits may be less likely to believe that positive CSR performance results in better financial performance. Survey evidence suggests that the belief that CSR activities benefit firms financially is more common and has a longer history in Western Europe than in the US (KPMG 2011; BNY 2012; Amel-Zadeh and Serafeim 2017). Thus, such motivated reasoning could be more prevalent among German investment professionals. To test whether this is the case, we check for a moderating effect of participants' beliefs regarding the benefits of CSR activities to society (SOCBEN) on the path from assessed CSR performance (CSRPERF) to assessed financial performance (FINPERF). The results are reported in Figure 4.

Panel A of Figure 4 shows that, for German investment professionals, SOCBEN has a significantly positive moderating effect on the relation between CSRPERF and FINPERF (.17, $p = .011$). That is, consistent with motivated reasoning, the more German investment professionals believe in general that there are important societal benefits of CSR activities, the more positive they see the link between CSR performance and financial performance.

In contrast, Panel B shows there is no such moderating effect of SOCBEN on the link between CSRPERF and FINPERF for US participants (.01, $p = .471$). Here only the moderating effect of SOCBEN on the direct link between CSRPERF and $INV_{PERSONAL}$ persists. Thus, it appears that German investment professionals may engage in motivated reasoning while US investment professionals do not.

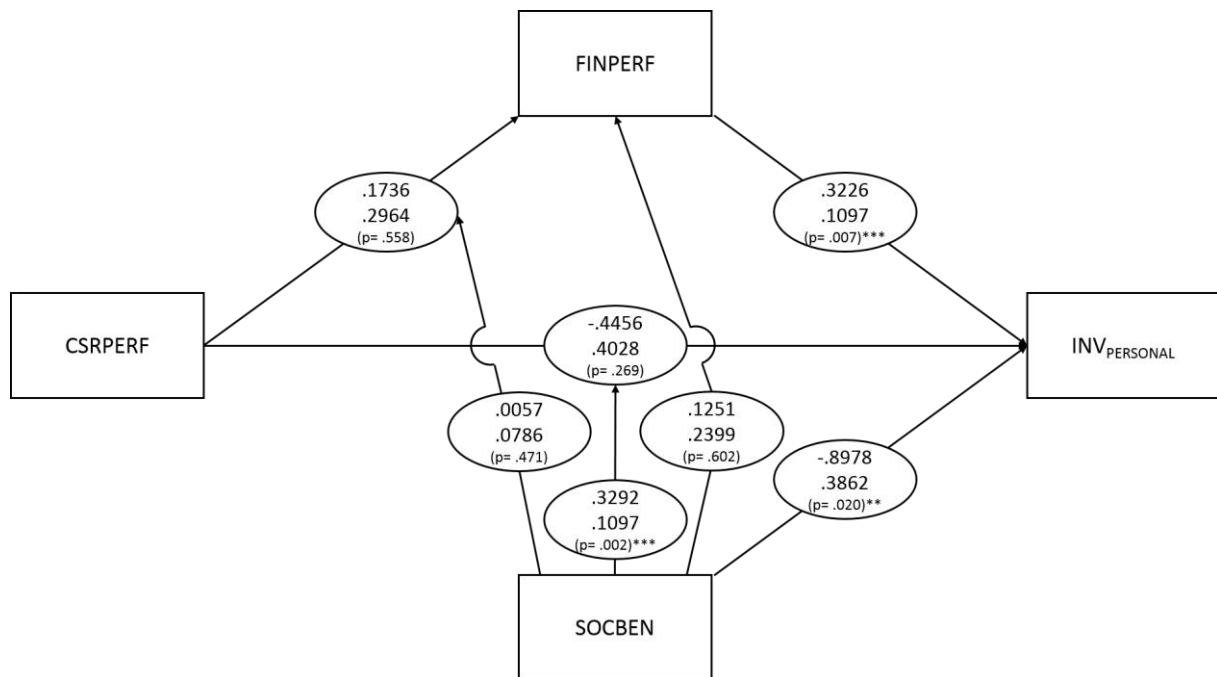
Figure 4: Extended Path Model on the Effect of Investors' General Attitude towards the Societal Benefits of CSR Activities on the Relation between CSR performance and financial performance

Panel A: German Investors



Note: N=51, CD = .878.

Panel B: US Investors



Notes: N=55, CD=.933.

Observations include all participants from the positive CSR performance information present conditions (N=51 for German investors (Panel A), N=55 for US investors (Panel B)). Positive CSR performance information is manipulated by disclosing information about the firm's positive CSR performance together with financial performance information. The path models are estimated using a covariance-based structural equation model with heteroscedasticity-robust standard errors. ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

Overall, our results show that German and US investment professionals react to positive CSR performance information in a very similar manner. However, while both groups assess a positive link between CSR performance and financial performance, the reason for this link appears to differ somewhat across the two groups. For German participants the link appears to be at least partially due to motivated reasoning while for US participants this does not appear to be the case.

Current vs. Longer-Term Financial Performance

Our analysis so far has used measures of financial performance that combine investment professionals' assessment of both current and long-term financial performance. We also examine whether any of our results differ if we use the separate measures for investment professionals' assessments of current and long-term financial performance in our tests. We first analyze the models in Figure 1 using assessments of current financial performance ($FINPERF_{CUR}$) and long-term financial performance ($FINPERF_{LT}$) rather than the combined variable. Consistent with the argument offered by some that CSR performance assessment mainly affects long-term financial performance (Eccles, Ioannou, and Serafeim 2014; Vogel 2005), untabulated results show that for both German and US investment professionals, the effect of CSR performance, $CSRPERF$, on long-term financial performance, $FINPERF_{LT}$, appears stronger (German: .23, $p = .033$; US: .21, $p = .050$) than the effect on current financial performance, $FINPERF_{CUR}$ (German: .18, $p = .135$; US: .07, $p = .317$).

However, the direct effect of CSR performance, $CSRPERF$, on investment, $INV_{PERSONAL}$, always persists whether current financial performance or long-term financial performance is used in the analysis (all p 's $< .010$). These results illustrate the robustness of our conclusions regarding the important role beliefs about the societal benefits of CSR activities play in predicting investment behavior.

V. Conclusion

We examine whether and how experienced German and US investment professionals use disclosed CSR information in their personal investment decisions and investment recommendations to clients. Given that most firms now disclose some information about their CSR activities (KPMG 2015), it is important to understand how and why investment professionals and financial intermediaries use such information.

We predict and find that German and US investment professionals assess higher financial performance when positive CSR information is disclosed than when no CSR information is disclosed, although these differences are statistically significant only for the German investors. *Within* the CSR condition, both German and US participants' assessments of CSR performance significantly affect their investment decisions. However, US investment professionals appear to require a higher level of assessed CSR performance than Germans before they increase their investments in response to disclosed CSR information as compared to when no CSR information is disclosed.

We also predict and find that both German and US participants invest more when positive CSR information is disclosed than when no CSR information is disclosed, although for US investment professionals the difference is only significant for those who believe most strongly that CSR activities provide important societal benefits. This subgroup invests more but does not expect significantly higher financial performance when a firm discloses positive CSR performance information, suggesting that for at least some portion of investment professionals, factors other than expected financial performance affect their investment decisions. Consistent with this view, we also predict and find that investment behavior is not only affected by the expected financial effects of CSR activities on the firm, but also by the value investors place on the societal benefits of the CSR activities. Importantly, we show that this direct effect of assessed CSR performance on investment amounts is driven by the value that investment professionals' place on the societal benefits associated with the firm's CSR activities. Finally, we find that when

making investment recommendations to clients both groups use CSR information in essentially the same manner as they do when making personal investment decisions.

Our results help inform the academic debate regarding the connection between CSR performance, financial performance, and investment. It appears that the effects of CSR performance on financial performance are often insufficient to fully explain investor response to positive CSR. Rather, individual beliefs about the degree to which CSR activities provide important societal benefits help explain investment decisions. Moreover, because such beliefs can differ across individuals, countries, and/or cultures, even identical financial and CSR performance disclosures can lead to different investment decisions. Consistent with this perspective, even though our results show that German and US investors react very similarly to *differences* in assessed CSR performance, we also provide evidence that disclosure of identical CSR information can still lead to differences in investment *amounts*.

Our results also add to our understanding of how investment professionals use CSR information by showing that their beliefs regarding whether CSR activities provide important societal benefits represent an important predictor of how they use CSR disclosures in their personal investment decisions and when making recommendations to clients.

Our findings have potentially important implications for those who receive investment advice from investment professionals. We find that investment professionals' use CSR information in the same way when making recommendations to their clients as when making their own their personal investment decisions. Thus, those relying on investment professionals for investment recommendations should be aware that the advice they receive reflects such influence.

Finally, we extend the findings of Elliott et al. (2014) by showing that their finding that *non-professional investors'* decisions are not affected by CSR disclosures when they are explicitly asked to first evaluate CSR performance does not hold for sophisticated investment professionals. We find that CSR disclosures affect investment professionals' investment decisions and recommendations even after they explicitly assess CSR performance.

Our study has limitations that could be addressed in future research. First, our study examines investment professionals' reactions to positive CSR information. Future research could examine whether our results change if CSR information is negative or not uniformly positive. Second, our study uses CSR information that is closely related to the firm's business activities. Future research could examine whether investment professionals react differently to information about CSR activities that are less closely related to the firm's general business activities. Finally, future research could examine how our results regarding CSR disclosures relate to other forms of non-financial disclosures.

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Appendix

Experiment Materials

[US version]

Background Information about Furniturama

Furniturama is a manufacturer and retailer of furniture. The company was founded in 1973 and has about 5,200 employees (calculated as full-time-equivalents). This number has remained more or less stable over the last three years. Furniturama is based in continental North America [*German*: Europe]. Its products and brand are well established across North America [*German*: in over 20 European countries]. The company's growth was above average during the first half of its life, but its growth has slowed down in recent years.

Wood currently makes up 70% of the raw materials used in Funiturama's furniture. Plastics and similar materials make up about 20%, and the remaining 10% of raw materials include primarily glass, steel, and fabrics. While traditionally wood made up more than 70% of Furniturama's raw materials, in recent years plastics and other similar materials have become more popular; their usage has increased while the usage of wood has decreased.

Furniturama owns a substantial part of its supply chain, including the plants in which its furniture is manufactured and the retail stores in which it is sold. However, Furniturama buys its wood mainly from suppliers located in North America [*German*: Northern Europe], Brazil, Cameroon and Indonesia. About half of this wood is then processed by Furniturama's sawmills, with the other half being processed by smaller sawmills owned by other companies that are situated close to the main wood suppliers. The processed wood is then shipped to Furniturama's manufacturing plants.

The company has long been a leader in the production and sale of relatively inexpensive, but good quality, systems of shelves, wardrobes, and cupboards that can be combined very flexibly for use in offices, living rooms, family rooms, or bedrooms. However, this particular type of furniture has recently faced some pricing pressure because of competitively priced imports from Asia. To keep its profit margin high, Furniturama has begun expanding its product mix to include higher-quality and higher-priced furniture to be sold to more affluent customers.

Financial Performance Data

		2014	+/- 2014/13	2013	+/- 2013/12	2012
Income Statement (\$ (€), in thousands)	Total Revenues	870,651	1.0%	861,942	3.8%	830,214
	Total Cost of Sales	-569,876	-0.4%	-571,889	3.7%	-551,400
	<i>Gross Profit</i>	300,775	3.7%	290,053	4.0%	278,814
	<i>Gross Margin</i>	34.5%	0.9%	33.7%	0.1%	33.6%
	General and Administrative Expenses	-69,420	0.3%	-69,210	1.8%	-67,988
	Sales and Marketing Expenses	-119,527	5.5%	-113,256	4.5%	-108,410
	Research and Development Expenses	-24,548	9.7%	-22,385	7.0%	-20,929
	<i>Operating Income</i>	87,279	2.4%	85,202	4.6%	81,487
	<i>Operating Margin</i>	10.0%	0.1%	9.9%	0.1%	9.8%
	Interest Payments	-18,021	-2.6%	-18,502	-3.6%	-19,194
	Taxes	-16,761	6.9%	-15,674	9.4%	-14,327
	<i>Net Income</i>	52,498	2.9%	51,025	6.4%	47,966
	<i>Profit Margin</i>	6.0%	0.1%	5.9%	0.1%	5.8%
Cash Flow (\$ (€), in thousands)	Net Cash Flow from Operating Activities	115,999	2.6%	113,081	5.1%	107,592
	Net Cash Flow from Investing Activities	-40,385	2.4%	-39,420	1.4%	-38,872
	Net Cash Flow from Financing Activities	-48,385	3.5%	-46,752	3.0%	-45,381
	Change in Cash and Cash Equivalents during Year	27,229	1.2%	26,909	15.3%	23,339
Performance Ratios (\$ (€))	Gross Profit per Unit	161.8	3.4%	156.6	5.3%	148.7
	Net Profit per Unit	28.2	2.6%	27.5	7.7%	25.6
Capital Structure	Equity Ratio	54.5%	1.3%	53.2%	1.2%	52.0%

Environment and Employee Data [only CSR condition]

	2014	+/- 2014/13	2013	+/- 2013/12	2012	Industry Range	Industry Average
Environmental Issues							
<i>Higher numbers indicate more environmentally friendly performance:</i>							
Share of total wood waste that is recycled	80.2%	9.5%	70.7%	9.9%	60.8%	10% - 88%	53%
Share of total energy usage from renewable sources	53.1%	6.5%	46.6%	10.7%	35.9%	5% - 65%	33%
<i>Lower numbers indicate more environmentally friendly performance:</i>							
Total water pollution as measured by Chemical Oxygen Demand (COD) in mg/L of wastewater released	214.1	-13.9%	248.8	-13.3%	287.1	135 - 540	320
Total air pollution from Volatile Organic Compounds (VOC) in mg/m3 released	12.5	-21.1%	15.9	-26.4%	21.6	9 - 43	25
Employee Issues							
<i>Higher numbers indicate more employee-friendly performance:</i>							
Share of Furniturama's operations in compliance with International Labor Organization standards	87.1%	3.2%	83.9%	5.1%	78.8%	60% - 90%	76%
Share of Furniturama's suppliers in compliance with International Labor Organization standards	66.2%	4.9%	61.3%	5.1%	56.2%	30% - 70%	52%
Total spending on employee safety and training (in \$ (€) per full time equivalent employee)	1,415.3	14.4%	1,273.4	19.8%	1,033.2	300 - 1700	960
<i>Lower numbers indicate more employee-friendly performance:</i>							
Share of absent time from scheduled work due to work-related injuries and hazards	1.0%	-0.1%	1.1%	-0.2%	1.3%	0.7% - 2.2%	1.4%

Questionnaire

Please answer the following questions.

For the next two questions assume that Furniturama's stock is currently selling at a typical earnings multiple for the furniture industry.

Assume that you have decided to invest 5% of your personal investment portfolio (i.e., \$10,000) in the furniture industry. How much of this \$10,000 amount would you be willing to invest in Furniturama? [\$, in thousands]

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10									

Assume that you have a client who has decided to invest 5% of his/her investment portfolio (i.e., \$10,000) in the furniture industry. How much of this \$10,000 amount would you advise your client to invest in Furniturama? [\$, in thousands]

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10									

How do you evaluate Furniturama's <u>current</u> financial performance?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very bad	Average								Very good	
How do you evaluate Furniturama's <u>longer-term future</u> financial performance?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very bad	Average								Very good	
How do you assess Furniturama's risk that a future event will have a major negative effect on its earnings?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very low	Average								Very high	

[Only CSR condition: order counter-balanced (either first or third question block).]

How do you evaluate Furniturama's performance on environmental issues?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very bad		Average						Very good		

How do you evaluate Furniturama's performance on employee issues?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very bad		Average						Very good		

How do you evaluate Furniturama's overall performance on environmental and employee issues combined?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very bad		Average						Very good		

To help us better understand the reasoning behind your evaluations please also answer the following questions. [Only CSR condition.]

How did your assessment of Furniturama's performance on <u>environmental</u> issues influence your evaluation of the company's <u>current financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Not at all						Very positively		
How did your assessment of Furniturama's performance on <u>environmental</u> issues influence your evaluation of the company's <u>longer-term future financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Not at all						Very positively		
How do you believe an average stock market investor assesses the effect of Furniturama's performance on <u>environmental</u> issues on the company's <u>longer-term future financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Neither positively nor negatively						Very positively		
How did your assessment of Furniturama's performance on <u>employee</u> issues influence your evaluation of the company's <u>current financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Not at all						Very positively		
How did your assessment of Furniturama's performance on <u>employee</u> issues influence your evaluation of the company's <u>longer-term future financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Not at all						Very positively		
How do you believe an average stock market investor assesses the effect of Furniturama's performance on <u>employee</u> issues on the company's <u>longer-term future financial performance</u> ?										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively		Neither positively nor negatively						Very positively		

How do you believe Furniturama's performance on environmental issues influences the risk that a future event will have a major negative effect on its earnings?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Decreases risk very strongly					Not at all		Increases risk very strongly			

How do you believe Furniturama's performance on employee issues influences the risk that a future event will have a major negative effect on its earnings?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Decreases risk very strongly					Not at all		Increases risk very strongly			

Please answer the following questions. [Only CSR condition.]

When I evaluated Furniturama I assumed that their future performance on environmental issues would be...

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
very bad.		average.						very good.		

When I evaluated Furniturama I assumed that their future performance on employee issues would be...

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
very bad.		average.						very good.		

How much time did you spend analyzing the information regarding Furniturama's performance on environmental issues?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10
No time at all									A very high amount of time	

How much time did you spend analyzing the information regarding Furniturama's performance on employee issues?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10
No time at all									A very high amount of time	

Please indicate how strongly you agree with each of the following statements.

A firm's actions to improve its impact on the environment are important for the firm's long-term value creation.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

A firm's actions to improve employees' working conditions throughout its supply chain are important for the firm's long-term value creation.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

Information about a firm's actions to improve its impact on the environment is important to determine its firm value.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

Information about a firm's actions to improve employees' working conditions throughout its supply chain is important to determine its firm value.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

Please indicate how strongly you agree with each of the following statements.

A firm's actions to improve its impact on the environment provide important societal benefits.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

A firm's actions to improve employees' working conditions throughout its supply chain provide important societal benefits.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree			Strongly			
agree.				nor disagree.			agree.			

Please indicate how strongly you agree with each of the following statements.

Assume that a firm's activities to improve its impact on the environment reduce its financial profits. Please indicate your agreement to the following statement:

As a private investor, I would be willing to forgo financial profits if a firm improved its impact on the environment.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

Assume that a firm's activities to improve employees' working conditions throughout its supply chain reduce its financial profits. Please indicate your agreement to the following statement:

As a private investor, I would be willing to forgo financial profits if a firm improved employees' working conditions throughout its supply chain.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

Assume that a firm's activities to improve its impact on the environment reduce its financial profits. Please indicate your agreement to the following statement:

The average stock market investor would be willing to forgo financial profits if a firm improved its im-
act on the environment.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

Assume that a firm's activities to improve employees' working conditions throughout its supply chain reduce its financial profits. Please indicate your agreement to the following statement:

The average stock market investor would be willing to forgo financial profits if a firm improved employ-
ees' working conditions throughout its supply chain.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

Please answer the following questions.

What % of other stock market investors do you believe would be willing to forgo any financial profit if a firm improves its impact on the environment?

[Please enter a value between 0 and 100.]

	<input style="width: 80%;" type="text"/>	%
--	--	---

What % of other stock market investors do you believe would be willing to forgo any financial profit if a firm improves its employees' working conditions throughout their supply chain?

[Please enter a value between 0 and 100.]

	<input style="width: 80%;" type="text"/>	%
--	--	---

Please indicate the extent to which you prefer to invest in individual stocks or in a market wide equity index fund.

○	○	○	○	○	○	○	○	○	○	○
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly prefer individual stocks.					Both are equally attractive.		Strongly prefer equity index.			

Please indicate how strongly you agree with each of the following statements. *[These were additional questions included in the US version and not in the German version. The No CSR condition only included the first two questions.]*

I am willing to invest more in a firm that takes actions to improve its impact on the environment than one that does not because I value the societal benefits of such actions.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

I am willing to invest more in a firm that takes actions to improve employees' working conditions throughout its supply chain than one that does not because I value the societal benefits of such actions.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

By taking actions to improve its impact on the environment, Furniturama creates important benefits to society that are independent from current or longer- term future financial performance.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

By taking actions to improve employees' working conditions throughout its supply chain, Furniturama creates important benefits to society that are independent from current or longer- term future financial performance.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Strongly dis-				Neither agree				Strongly		
agree.				nor disagree.				agree.		

Please answer the following questions. [These were additional questions included in the US version and not in the German version. These questions were asked only in the CSR condition and were not included in the No CSR condition.]

Please indicate how you believe Furniturama's actions to improve its impact on the environment would affect other investors' decisions to invest in Furniturama.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively			No effect				Very positively			

Please indicate how you believe Furniturama's actions to improve employees' working conditions throughout its supply chain would affect other investors' decisions to invest in Furniturama.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-5	-4	-3	-2	-1	0	1	2	3	4	5
Very negatively			No effect				Very positively			

When making your investment decision, did you consider how other investors would react to Furniturama's actions to improve its impact on the environment?

- ☐ Yes
☐ No

When making your investment decision, did you consider how other investors would react to Furniturama's actions to improve employees' working conditions throughout its supply chain?

- ☐ Yes
☐ No

General information

Thank you for participating in this study. Finally, we would like to ask you to provide a few personal details. Recall that your answers will remain completely anonymous and that we will not be able to link your answers to your identity.

What is your occupation? (Please choose only one.)
<input type="radio"/> Sell-side analyst
<input type="radio"/> Buy-side analyst
<input type="radio"/> Fund/Asset/Portfolio manager
<input type="radio"/> Investment advisor
<input type="radio"/> Other, please specify: _____

What is...	
... the number of years of your experience with investment valuation?	Ca. _____ years.
... the <u>overall</u> number of years of your professional experience?	Ca. _____ years.
... the number of years of professional experience <u>in your current position</u> ?	Ca. _____ years.

Is socially responsible and/or ethical investing your primary job responsibility? [Question added later and only in the US version.]
<input type="radio"/> Yes
<input type="radio"/> No

What is your gender?
<input type="radio"/> Female
<input type="radio"/> Male

What is your nationality? _____

Thank you for your participation!

ESSAY 4

How Graphics Can Influence Investment Professionals' Valuations under Time Pressure: Evidence from an Eye-Tracking Study

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Abstract

In recent years, firms have increased their reporting of information that is not based on accounting standards, e.g. non-financial performance information regarding Corporate Social Responsibility, intangibles, or intellectual capital. This provides firms with leeway for strategic choices as to how and what to report and emphasize. For example, firms can use graphics as a tool of persuasion and impression management. Investors may be affected by these reporting elements because graphics tend to be salient and easily accessible. Especially when cognitive resources are scarce, e.g. because of time pressures, graphics may be particularly influential when investors make an investment decision. We predict that graphics can direct investors' attention to certain particularly positive key performance indicators (KPI), which can then lead to higher assessments of a firm's investment attractiveness. We test our predictions in an experiment with investment professionals as participants and manipulate whether a graphic is shown or not before we provide participants with quantitative information regarding a firm's performance. Participants are then asked to assess the firm as investment opportunity. Importantly, we examine investors' information acquisition using eye-trackers. Consistent with our theory, we find that a graphic can direct investors' attention to particularly positive performance indicators: we further find that it leads to higher assessments of a firm's investment attractiveness. Our results are important because they suggest that investors can be guided, if not manipulated by graphics when their cognitive resources are scarce.

Keywords: Non-financial Information, Corporate Social Responsibility (CSR), Sustainability, Integrated Reporting, Eye-Tracking, Salience, Availability

I. Introduction

Generally Accepted Accounting Principles (GAAP), e.g. IFRS or US-GAAP, govern firm reporting through specific requirements concerning content and presentation format. However, in so-called voluntary disclosure (VD), firms can report information on non-GAAP aspects (Deegan 2014; Bewley and Li 2000). For example, VD can include items on asset productivity such as customer or employee satisfaction (Lev and Gu 2016), intellectual capital (Nikolaj 2003; Abdolmohammadi 2005), intangibles (Lev and Gu 2016) or Corporate Social Responsibility (Margolis, Elfenbein, and Walsh 2009; Huang and Watson 2015; Friede, Busch, and Bassen 2015). VD is not governed by tight rules, so firms have discretion to decide whether and how to disclose and emphasize certain aspects and key performance indicators (KPI). This allows impression management by firms maximizing their value from reporting (Beattie and Jones 1992, Arunachalam, Pei, and Steinbart 2002): for example, firms can highlight well-performing KPIs (Amer 2005; Hillenbrand and Schmelzer 2017; Brown, Elliott, and Grant 2017).

VD becomes increasingly important as so-called integrated reports (Eccles and Krzus 2010, 2014) are emerging, aiming at combining mandatory reporting and VD as a novel form of reporting (IIRC 2013). Within the framework of VD, we are interested in the interaction of the disclosed elements, specifically the interaction of graphics and numerical data. We analyze whether investment professionals' attention can be directed to certain performance indicators highlighted by a graphic connecting non-financial performance indicators with financial performance indicators. Displaying this connection graphically might create the impression of a well-functioning chain of value creation and would not be a new phenomenon (Kaplan and Norton 1992; Banker, Chang, and Pizzini 2004). As graphics can increase the salience of specific information items (Bordalo, Gennaioli, and Shleifer 2012a, 2012b), they may have important behavioral effects on investors: investors may be (unduly) influenced because firms have some discretion to design their reports to create a favorable impression.

Visual representations (e.g. graphics) are prominent elements in firm reporting, especially at firm' websites (Ettredge, Richardson, and Scholz 2003; Bollen, Hassink, and Bozic 2006; Jones 2011). As powerful tools of persuasion (Jarvenpaa 1990; Arunachalam et al. 2002), they can have ambivalent effects. On the one hand, visual representations can assist information processing (Lurie and Mason 2007; Cardinaels 2008) because they can facilitate information processing, e.g. by creating vivid mental representations (Nisbett and Ross 1980; Hales, Kuang, and Venkatamaran 2011) and decreasing the cognitive effort required as they use less attentional resources (Loewenstein, Sunstein, and Golman 2014; Hillenbrand and Schmelzer 2017). On the other hand, because they are cognitively easier accessible, they can attract undue attention and interfere with investors' decision making when firms use them in their VD (Simon 1979; Shah and Oppenheimer 2007; Glazer, Steckel, and Winer 1992). Not always may investors be able to decipher these reporting tactics and to discount VD adequately (Coram, Monroe, and Woodliff 2009; Hobson and Kachelmeier 2005; Fanning, Agoglia, and Piercey 2015).

Graphics may be particularly influential in situations in which cognitive resources are scarce or depleted, e.g. when making decisions under time pressure. Under time pressure, information processing typically accelerates and individuals become more selective (Payne, Bettman and Luce 1996; Pietsch and Messier 2017; Kocher and Sutter 2006). This may be particularly common in the domain of investment decisions: financial markets are more than ever a high-speed environment where even "millisecond advantages" (Nursimulu and Bossaerts 2014; Busse and Green 2002) matter so that investment professional are under a general pressure to process and evaluate information quickly.

Thus, we predict that visually highlighting the link between performance driving performance indicators and financial performance indicators increases the salience of the underlying value creation process. When positive performance indicators are highlighted in a graphic we expect this to result in higher assessments of a firm's investment attractiveness.

To test our theory we conduct a 1x2 between-subjects experiment. We manipulate whether a firm discloses a graphic connecting some particularly positive non-financial with some particularly positive financial performance indicators before participants review a table containing quantitative financial and non-financial information and assess the firm as an investment opportunity. Importantly, this graphic only adds a visualization of the firm's strategic assertions communicated before to all participants. I.e., only the existence of the graphic differed between conditions: the information about the assertions regarding the importance of the performance driving factors is kept constant across conditions.

We focus on the procedural effects of a graphic and examine whether and how a firm could design a report to highlight certain performance indicators in order to create a favorable impression. To measure participants' attention and gain insights into their information acquisition, we use eye-trackers. These devices record the participants' eye movements: hence, we can analyze on which areas of interest (AoI) participants focus their attention. These data allow us to test whether a graphic guides participants' attention to performance indicators made salient in the graphic thereby receiving a special weight in the information processing. So far, prior accounting research has primarily used eye-tracking data with a focus on balanced scorecard settings. For example, they have been used to analyze the role of accountability in investment decisions (Dalla Via, van Rinsum, and Perego 2016) and for performance evaluation (Kramer and Maas 2016; Chen, Jermias, and Panggabean 2016). Dalla Via et al. (2016) report eye-tracking data supporting their argument that –compared to outcome accountability– process accountability requires more information search effort from managers making an investment decision, which increases investment decision quality. Kramer and Maas (2016) find that managers' prior experiences matter when they evaluate subordinates' performance; however, they do not find evidence that attention patterns predict evaluation outcomes. Chen et al. (2016) find that managers spending more time on strategically linked performance measures evaluate subordinates performance more consistent with strategic objectives of the business unit. The authors' findings

suggest that top-down reasons, e.g. knowledge about strategy is more important than presentation format: however, in our study, we keep the former constant and focus on potential salience effects of reported elements. Our research is further related to recent research that has developed an interest in analyst's behavior and found that the attention towards financial and non-financial information in management earnings forecasts may depend on whether historical performance is low or high and whether news are positive or negative (Bozzolan, Joos, and Rubaltelli 2017).

Importantly, our participants are experienced investment professionals from Europe. While prior related research has used non-professional investors as participants (Clor-Proell, Proell, and Warfield 2014; Hales et al. 2011; Rennekamp 2012; Tan, Wang, and Zhou 2014), the study of Tan et al. (2014) suggests that investment experience might mitigate biases related to the ease of information processing. Thus, it is important that we can rely on investment professionals as participants.

Results support our predictions. Participants spend more time on positive performance indicators mentioned in a graphic, which leads to higher assessments of the firm's investment attractiveness. Further, we find no evidence that the salience of some non-financial performance indicators spills over to other non-financial performance indicators not highlighted in a graphic.

Our design does not allow us to distinguish whether graphics lead to more or less accurate assessments of a firm's investment attractiveness and whether rather the firm or the investors would profit from the firm's reporting decision. However, our study is important because it shows how firms can use graphics in their VD to direct attention towards positive performance indicators and to persuade investors to invest. Graphically displaying the link between positive potential non-financial performance drivers and financial performance indicators –e.g. through graphical representations or by enhancing (degrading) positive (negative) aspects through the design of the visualization (Birnberg, Turopolec, and Young 1983; Beattie and Jones 1992; Nisbett, Zukier, and Lemley 1981; Jones 2011) – can increase the salience of certain reporting elements. This may then influence investors' decisions. This might improve firms' reporting

and investment decisions as prior research posits that investors do not pay sufficient attention to non-financials (Juravle and Lewis 2008; Eccles and Viviers 2011; Dumas 2015). However, our results are further important because they show that investors may need to be aware that they could be unduly influenced by firms' VD when cognitive resources are scarce, e.g. under time pressure or stress.

Hence, we also contribute to the emerging debate on the value and potential benefits, but also on potential problems of integrated reports for investors' decision-making (e.g. Eccles and Saltzman 2011; Jensen and Berg 2012; Abeysekera 2013; Busco 2014). Finally, our research may also inform standard setters and policy-makers whether and how to regulate firms' disclosures and specifically the use of graphical elements (Brown et al. 2017). This can be particularly important to safeguard compliance of firms with reporting rules and support comparability.

The remainder of the paper is structured as follows: Section 2 develops our hypotheses and research question, and Section 3 describes our methodology. Section 4 reports the result of our study before section 5 concludes this paper.

II. Theory and Development of Hypotheses and Research Question

In addition to standardized financial reporting according to GAAP (e.g. IFRS or US GAAP), firms are allowed to voluntarily disclose information on their activities that are not accounting-standards based. Such VD can serve to account for specific firm performance aspects for which disclosure is not regulated. Thus, when reporting (non-)financial²⁸ performance, firms have discretionary room to present themselves in the best way possible to manage impressions (Kleinmuntz and Schkade 1993; Beattie and Jones 1992; Arunachalam et al. 2002; Jones 2011). Inter alia, they can decide to make specific pieces of information more salient (Jarvenpaa 1990; Brown et al. 2017; Bordalo et al. 2012a, 2012b). This does not necessarily have to be detrimental

²⁸ We refer to those contents of firm reports that are not governed by accounting standards as non-financials because they are not part of the primary financial statements. However, by this, we do not claim that non-financials do not affect financials or that they are irrelevant.

as it could allow investors to arrive at a more accurate valuation of the firm. For example, a study in which salience of fair value changes was not the result of a firm decision, but exogenously imposed by the experimenters shows that making these changes more salient allows to better incorporate disclosed measurement differences into judgments because it eases cognitive effort (Clor-Proell et al. 2014). However, firms could also use their discretionary room to influence investors' judgments unduly. For example, they could decide to reduce the salience of other information to hide it or make non-diagnostic information more salient, e.g. to profit from a dilution effect (Nisbett et al. 1981). In a VD setting, these reporting decisions would not exogenous, but strategic, and investors would need to factor in the firm's strategic reporting decisions.

Investors may be affected by salient elements because individuals restricted by bounded rationality may use these as heuristic cues to cope with large amounts of information (Simon 1979; Shah and Oppenheimer 2007). Attention is a finite resource (Hirshleifer, Lim, and Teoh 2011; Weber and Johnson 2009) and can be scarce good in decision making in general, and in financial markets in particular (Loewenstein et al. 2014; Hillenbrand and Schmelzer 2017). Increasing salience can have positive or negative effects on investors' decisions. On the one hand, salient elements can help investors to focus on the important items. On the other hand, salient elements can use attentional resources that are not available for alternative tasks and can lead to ignoring other (relevant) information (Glazer et al. 1992).

Time pressure (Busemeyer and Johnson 2004; Ordonez and Benson 1997) may intensify the problem of scarce attentional resources. Prior research has found that time pressure influences information processing and decision making (Payne, Bettman, and Johnson 1993; Payne, Bettman, and Luce 1996; Busemeyer and Johnson 2004). For example, time pressure can affect the amount of information searched for and used in a given time (Zur and Beznitz 1981; Payne et al. 1993, 1996) and it lets individuals accelerate the execution of the decision process (Edland and Svenson 1993), which could potentially lead to inferior results. Additionally, under severe

time pressure, individuals were found to utilize information selectively: they may spend less time on gathering information and use less information than was available (Maule, Hockey, and Bdzola 2000), which may also have a negative impact on decision quality (Kocher and Sutter 2006).

One way to guide the attention of a report's users could be the use of graphics to illustrate and emphasize certain elements. For example, Brown et al. 2017 provide evidence that presenting non-GAAP earnings information as an image after participants review earnings measures (e.g. on social media or a corporate website) may affect how investors process and rely on adjusted earnings metrics. Due to the human condition, graphical or visual information is particularly salient and attracts attention: depending on the report creators' intentions, graphics, therefore, may make it easier or more difficult to understand and interpret information (Cardinaels 2008; Hillenbrand and Schmelzer 2017; Arunachalam et al. 2002). On the one hand, displaying information graphically may facilitate information processing and decision-making; on the other hand, making a specific access to information easy might obstruct alternative approaches (Schkade and Kleinmuntz 1993) and could result in an overweighting of less diagnostic information (MacGregor and Slovic 1986; Lurie and Mason 2007; Nisbett et al. 1981). Graphics are more vivid than numerical information (e.g. presented in tables) and are more directly translatable in mental representations. Hales et al. (2011) show how vividness can matter in an investment context as vivid information is processed more easily than less vividly presented and less salient information (Nisbett and Ross 1980; Keller and Block 1997; Lurie and Mason 2007).

As it is easier to form mental representations from graphics and to access them (Kahneman 1973), they can also create positive feelings of fluency (Oppenheimer 2008; Alter and Oppenheimer 2009; Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, and Simons 1991). Individuals prefer to place more weight on information that is easy to process (Gluck and Bower 1988; Goodie and Crooks 2004; Shah and Oppenheimer 2007) and tend to consider information that is more fluent, i.e. cognitively easier to process to be true (Reber and Schwartz 1999). Applying

this theory to the readability of financial disclosures, Rennekamp (2012) shows that the easiness with which information is processed can play an important role in investment decisions.

Graphics may even be more likely to play an important role under time pressure. In a related eye-tracking study from consumer decision-making, Pieters and Warlop (1999) found that consumers under time pressure accelerate visual scanning and increase the attention spent on pictorial information compared to brand information. Thus, graphics can have important behavioral effects. In this sense, they are not neutral, but a tool of persuasion and likely only used by firms if the message conveyed is in their interest (Amer 2005; Jones 2011).

Firms may choose to add graphics to their performance reporting to make certain elements more salient and increase their weight (Mandel and Johnson 2002). For example, firms may choose to increase the salience of particularly positive performance indicators they believe or want investors to believe to lead to positive future financial performance. Particularly under time pressure, investors might be particularly vulnerable for heuristics, e.g. relying on salient elements. Hence, time-pressured investors following the guidance of this graphics could decide to direct more attention to this displayed and emphasized link between suggested driving performance indicators and future financial success. We expect that –compared to investors without this guidance– investors provided with a graphic of a key driver model might attribute a higher importance to this link in their information processing. If the components of this link were chosen to create the best impression of the firm’s future success (i.e. by emphasizing positive performance indicators), an increased importance of these items would then be expected to increase the firm’s attractiveness as investment.

H1: Making a key driver model with positive performance indicators graphically salient guides investors’ attention to this model.

H2: Making a key driver model with positive performance indicators graphically salient increases a reporting firm’s attractiveness as investment.

To understand better what attracts attention when a key driver model with positive performance indicators is made salient, we further want to examine which non-financial drivers exactly receive more attention. On the one hand, only the specific performance indicator made graphically salient might receive more importance in the investor's mental representation and, therefore, matter more in the investment decision. I.e., investor would only think more about the elements included and explicitly mentioned in the graphic. On the other hand, investors could extend their attention to other potential non-financial key drivers when they are triggered to think about a broader model of value creation. The reason for this is that the mental representation of a specific element and the category it belongs to can merge when a specific element from a category is made more salient and is perceived to be a good proxy for the whole category (Bless and Schwarz 2010). Thus, making a key driver model salient might not only increase the importance of the specific performance indicators in the graphic, but might also increase the importance of non-financial key drivers in general: therefore, it might also affect non-financial performance indicators not included in the graphic.

In our research questions, we want to explore whether a graphically salient key driver model has a rather narrow effect on the non-financial performance indicators included in the graphic or whether this effect spills over to indicators not included in the graphic.

RQ: Does making a key driver model with positive performance indicators graphically salient increase the attention directed to non-financial performance indicators in general or is this limited to the specific performance indicators made salient?

III. Method

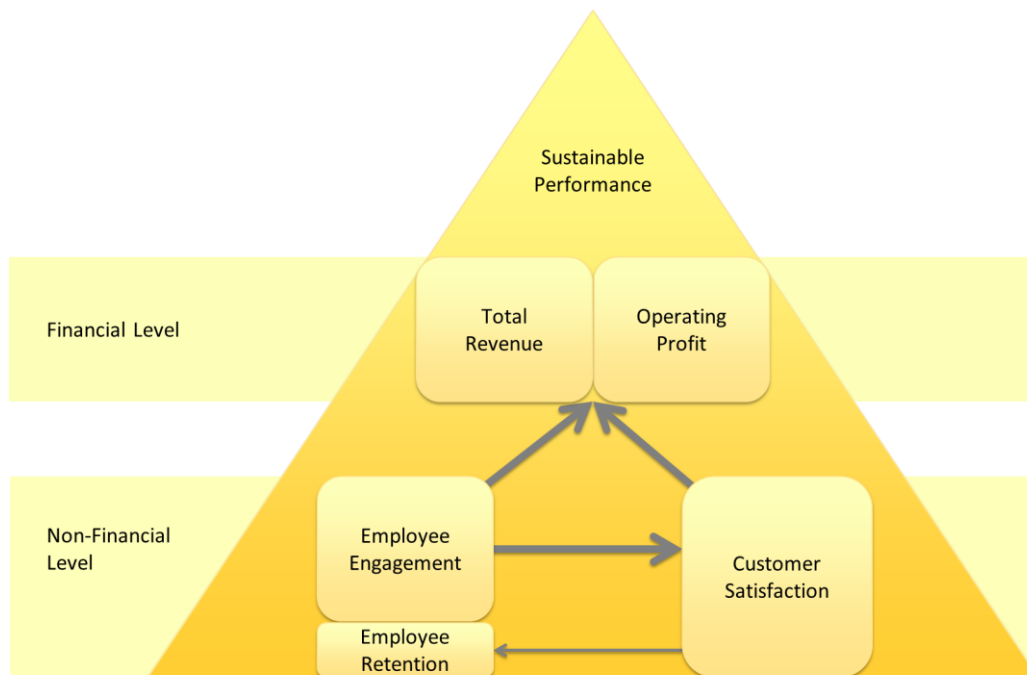
Design

In an 1x2 experiment (cf. the appendix), we manipulate between subjects whether an IT firm discloses a graphic (Figure 1) displaying a key driver model²⁹ together with its performance information (“Graphic” condition) or not (“No graphic” condition).

Figure 1: Graphic

Connecting financial and non-financial performance

In general, we believe that non-financial performance indicators are important drivers of financial success



Specifically, participants were provided with a graphic linking possible non-financial key drivers (“Employee Engagement”, “Employee Retention”, and “Customer Satisfaction”) to financial performance indicators (“Total Revenue” and “Operating Profit”). Importantly, this graphic does not contain new information, but provides only a visual representation of the firm’s strategic beliefs. At this point of time, participants from both conditions were already informed that the firm believed that employee satisfaction, customer satisfaction and other non-financial performance indicators are important drivers of financial success. Thus, we only manipulate the

²⁹ For the design of our instrument, we were inspired by the corporate reporting homepage of SAP (SAP 2016), a German software blue chip. Within the section on strategy, SAP offers visitors a visual representation of the “Connectivity of Financial and Non-Financial Indicators” and how these indicators may be interrelated.

existence of a graphic depicting this link and keep the information about the firm's strategic beliefs constant across conditions.

All participants are then provided with a table containing a selection of performance indicators and their development over the two previous years. On the left half of this table, participants are provided with information about the performance in the two financial categories “financial key performance indicators” and “shares and dividend”. On the right half of the table, they are provided with information about performance in the two non-financial categories “employees and customers”³⁰ and “environmental”.

In order to test our theory, the performance indicators made salient in the graphic show – on average– a more positive performance compared to the performance indicators not made salient. Specifically, the former show an improvement of around 13% whereas the latter show an improvement of around 3%. This way, if participants were affected by the existence of the graphic, they should get a more positive impression of the firm as investment opportunity than participants without a graphic's guidance. In order to have our participants make a decision under time pressure, the time limit to gather information about the firm was set to 120s in the condition without the graphic (“No graphic”) and to 135s in the condition showing the graphic (“Graphic”). This time limit induced a feeling of time pressure, but provided participants with enough time to form a first impression of the firm.³¹ As our dependent variable, we asked participants for their assessment of the firm's investment attractiveness.

To ensure the suitability of our instrument and our design choices we had run a pilot study with seven investment professionals who did not participate in the subsequent experiment. Based on their feedback, we made minor adjustments to our experimental materials.

³⁰ We refer to this category in our later analyses as SOCIAL.

³¹ On average, participants in the “No graphic” condition spent 92.7s –approximately 30s less than the maximum possible time– on the table containing the performance information. Participants in the “Graph” condition spent 86.9s reviewing this table. Furthermore, when asked how confident they were about their assessments of the investment attractiveness and of the financial and non-financial performance, participants were quite confident (no measure was significantly smaller than 4, the midpoint of our scale: all $t < .89$, $p > .41$).

Participants

Our participants are investment professionals who participated at a summer school of a European financial analysts' association. They were asked to participate in a short valuation exercise involving eye-trackers. From our initial sample of 26 participants, we had to exclude seven participants from the analyses, mainly because of technical calibration failures. Table 1 provides information about our final sample of 19 participants.³²

Table 1: Sample Description

Panel A: Number of Participants

Study Completed	Total	n = 26
Exclusions	Total	n = 7
	<i>Reason for Exclusion</i>	
	Restart due to technical problems	n = 1
	Participant with no work experience	n = 1
	Participants could not be calibrated	n = 5
Final sample	Total	n = 19
	“No graph”	n = 7
	“Graph”	n = 12

Panel B: Participants by Occupation

<i>Occupation</i>	<i>%</i>
Investment consultant or advisor	36.8
Financial analyst	31.6
Fund manager	15.8
Other (i.e., corporate finance, treasury management)	15.8

Panel C: Participants' Experience in Investment Valuation

<i>Years of Investment Valuation Experience</i>	<i>%</i>
Less than 5 years	44.4
5 to 9 years	16.7
10 to 14 years	16.7
15 to 19 years	5.6
20 years and more	16.7

³² Inferences do not change when the analyses for which eye-tracking data are not required include the five participants discarded due to calibration problems.

On average, participants had 8.3 years of experience in investment valuation and a total work experience of 13.4 years. They mainly worked as investment consultants or advisors (36.8%), financial analysts (31.6%), or fund managers (15.8%): 15.8% were classified as “Other”.³³

Eye-Trackers

To track participants’ eye-movements, we used mobile devices (*Eyegaze EyeFollower* by *interactive minds*). These eye-trackers measure participants’ gaze points at a 120Hz rate with a typical average bias error of .45°. Four cameras are built into a small box onto which a standard 24” LCD monitor is fixated. Both the monitor and the camera box are connected to a notebook recording the eye-tracker data. Two of these cameras follow the head movements and direct the other two cameras to track the eye-movements by measuring eyeball reflections. These devices allow participants to move their head freely without being disturbed by any additional equipment.

Detailed Procedures

After participants had agreed to participate in our study, they were randomly assigned to a condition and seated in front of the eye-trackers in a separate, moderately lit room at the conference site. In front of their eye-tracker, participants found the printed experimental materials showing a short introduction to the study. Participants were told that their task was to evaluate an IT firm as an investment opportunity. Most importantly, all participants were informed that the firm believed “that, in general, employee satisfaction, customer satisfaction, and other non-financial performance indicators are important drivers of financial success and therefore use[d] an Integrated Report to provide information on its financial and non-financial KPIs.” Thus, information about the firm’s strategic beliefs regarding the importance of (some) performance drivers was kept constant across conditions. Participants were then informed that they first had

³³ Participants are classified based on the occupation they indicated on the post-experiment questionnaire. Participants indicating “other occupation” and providing details about their occupation are re-classified into another specific category when possible.

to complete a short procedure to calibrate the eye-trackers individually, before they had limited time to review the firm's reported performance data. Participants in the "Graphic" condition were also informed how to navigate back and forth between the graphic and the performance data table. All participants also learned that and how they could finish the exercise before their time was up ("No graphic" condition: 120s, "Graphic" condition: 135s). Participants then started the calibration procedure. Properly and thoroughly calibrating the participants is key to gathering reliable eye-tracker data and research accuracy. Hence, we use only successfully calibrated participants.

After the calibration, only participants in the "Graphic" conditions saw a graphic (Figure 1) containing the visual representation of a key driver model. Importantly, the heading over this graphic gave no indication that there was any empirically tested foundation for the firm's beliefs about the possible links between non-financial and financial performance indicators. Specifically, under the heading "Connecting financial and non-financial performance", participants could read the sentence: "In general, we believe that non-financial performance indicators are important drivers of financial success", which only repeated the information already provided in the instructions to participants from all conditions.

Next, all participants were provided with a selection of the firm's performance data and participants had limited time to review the data and assess the firm's investment attractiveness. After they provided this assessment, participants filled out a short PEQ. As a small token of appreciation, participants could provide us with their email address at the end of the otherwise anonymous participation to receive a heat map showing which information they focused on when they were working on the task.

Measures

To test our hypotheses and research question regarding the attention of investors, we measure the time spent inside different areas of the table containing the information about the firm's (non-)financial performance as recorded by the eye-trackers. To facilitate the analysis of

eye-movements, the eye-trackers' software (*Nyan*) can be configured to measure, calculate and export the total time spent inside so-called areas of interests (AoI). Depending on the desired analysis, different AoI can be defined. For our analyses, we define rectangular AoI: Figure 2 shows an overview over these AoI.

Figure 2: Definitions of Areas of Interests (AoI)

← LABEL →		← PERF →	← LABEL →		← PERF →
“TABLELEFT”			“TABLERIGHT”		
Financial key performance indicators			Employees and Customers		
↑ “FINKPI” ↓	“OPS” <i>(Software subscription revenue, Cloud subscription revenue, Software and software-related service revenue)</i>		“SOCIAL” <i>(Number of employees at year-end, Personnel expenses per employee, Employee engagement in %, Business Health Culture Index in %, Women in %, Female managers in %, Employee retention in %, Customer Satisfaction: Net Promoter Score, Customer Retention: Ratio of New Customers to Lost Customers in %)</i>		
	“EARNINGS” <i>(Total revenue, Operating profit, Operating margin, EBIT, EBIT margin)</i>				
	“ASSPROD” <i>(Free cash flow, Net liquidity, Days' sales outstanding , Equity ratio, R&D expenses, R&D expenses in % of total revenue)</i>		Environmental		
	Shares and dividend			“ENV” <i>(Greenhouse gas emissions, Greenhouse gas emissions per employee, Greenhouse gas emissions per revenue, Total energy consumed, Energy consumed per employee, Renewable energy sourced in %, Data center energy consumed, Data center energy per employee)</i>	
“SHARES” <i>(Weighted average shares, Earnings per share, Dividend per share, Share prices at year-end, Market capitalization)</i>					

Notes: This table outlines the different AoI used. "TABLELEFT" consists of information about both the Financial Key Performance Indicators ("FINKPI") and the Shares and Dividend ("SHARES"). The former category is further broken down in "OPS" (referring to operative KPIs), "EARNINGS" (referring to earning KPIs), and "AssProd" (referring to asset productivity). "TABLERIGHT" consists of non-financial performance information about "SOCIAL" issues relating to employees and customers and environmental ("ENV") issues. Horizontally, an AoI consists of the AoI LABEL (description of the KPI) and the AoI PERF (numerical performance information). Note that the headers are only included in the AoI "TABLELEFT" and "TABLERIGHT".

Time spent is commonly used as proxy for attention (Findley and Gilchrist 2003; Casini and Maçar 1997; Wedel and Pieters 2008; Holsanova 2011; Chen et al. 2016): Table 2 shows an overview over our key measures.

Table 2: Measurement of Key Measures

Panel A: Important Areas of Interest (AoI)

TABLELEFT	Time [in s] spent on the left half of the performance data table containing the financial performance indicators.
TABLERIGHT	Time [in s] spent on the right half of the performance data table containing the non-financial performance indicators.
TABLERIGHT_REL_PAGE	Time [in s] spent on the right half of the performance data table relative to the time overall spent on the page.
TABLERIGHT_REL_AOI	Time [in s] spent on the right half of the performance data table relative to the time overall spent on all the AoI.
SOCIAL	Time [in s] spent on the category <i>Employees and Customers</i> .
ENV	Time [in s] spent on the category <i>Environmental</i> .

Panel B: Investment Attractiveness

INV	How do you evaluate ProIT as an investment opportunity on a scale from 0 to 100 (with 0 being ‘poor investment’ and 100 being ‘excellent investment’)?
-----	--

Our main variables regarding investors’ attention spent (Table 2, Panel A) are TABLELEFT, the time spent on the left half of the data table containing the financial performance indicators, and TABLERIGHT, the time spent on the right half of the data table containing the non-financial performance indicators. As the key driver model suggests that the latter drive future financial performance, we use the attention for the non-financial performance indicators to measure the attention for the key driver model creating value. However, in addition to the absolute time spent, it is important to compare the time spent relative to the entire time for retrieving information. Thus, we define two additional relative measures for the non-financial KPI: the time spent either relative to the time overall spent on the page (TABLERIGHT_REL_PAGE)

or relative to the time spent on all the AoI (TABLERIGHT_REL_AOI). Further, we are interested in the two AoI within the larger AoI TABLERIGHT: SOCIAL, the time spent on the category employees and customers, and ENV, the time spent on the category environmental. For additional analyses, we define further AoI inside the AoI containing the four categories of performance indicators according to our table. We refer to the name and description of the performance indicators as LABEL and to the quantitative information describing the performance as PERF.

Our main dependent variable regarding the assessment of the firm's investment attractiveness is INV, which is our participants' assessment of the attractiveness (on a scale between 0 and 100) of our firm as an investment opportunity (Table 2, Panel B).

IV. Results

Descriptive Statistics

We start reporting our results by providing descriptive statistics for the key measures in our experiment (Table 3, Panel A and B).

Table 3: Descriptive Statistics (Mean, Median, [Standard Deviation]) and Observations for Key Measures

	"No graphic"	"Graphic"
Panel A: Important Areas of Interest (AoI)		
TABLELEFT ^a	59.66	49.78
	68.03	53.17
	[19.24]	[21.29]
TABLERIGHT ^b	21.65	27.98
	21.90	29.49
	[11.80]	[10.44]
TABLERIGHT_REL_PAGE ^c	.23	.32
	.23	.30
	[.10]	[.11]
TABLERIGHT_REL_AOI ^d	.26	.38
	.23	.35
	[.10]	[.13]

SOCIAL ^e	12.21 9.29 [8.67]	17.05 19.05 [6.30]
ENV ^f	7.79 8.44 [5.24]	7.69 6.87 [4.49]
<i>Panel B: Investment Attractiveness</i>		
INV ^g	56.43 50.0 [19.73]	68.17 65.0 [9.65]
Number of Observations	7	12

Notes: All attention measures refer to the time spent inside the respective AoI and are measured in seconds.

^a TABLELEFT: Time [in s] spent on the left half of the performance data table.

^b TABLERIGHT: Time [in s] spent on the right half of the performance data table.

^c TABLERIGHT_REL_PAGE: Time [in s] spent on the right half of the performance data table relative to time spent on the page.

^d TABLERIGHT_REL_AOI: Time [in s] spent on the right half of the performance data table relative to time spent on all AoI.

^e SOCIAL: Time [in s] spent on the category Employees and Customers.

^f ENV: Time [in s] spent on the category Environmental.

^g INV: Assessment of the attractiveness of our firm as an investment opportunity [on a scale from 0 to 100].

Participants in the “Graphic” condition seem to have spent more time on the half of the table with non-financial KPIs than participants in the “No Graphic” condition (27.98s vs. 21.65s). Results for the relative time measures show a similar pattern (time relative to page: 32% vs 23%, time relative to all AoI: 38% vs. 26%). The opposite is the case for the half of the table with the financial KPI. “No graphic” participants seem to have spent more time reviewing data in this half (59.66s vs. 49.78s). These results are in line with H1 predicting that making a key driver model with positive performance indicators graphically salient guides investors’ attention to this model. Moreover, they seem to suggest that participants not only increased the time spent on the non-financial KPIs, but also shifted importance away from the financial KPIs.

H2 predicts that making a key driver model with positive performance indicators graphically salient increases a reporting firm’s attractiveness as investment. Consistent with H2, participants in the “Graphic” condition assigned a higher score (68.17) than participants in the “No graphic” condition (56.43).

With regard to our RQ, there does not seem to exist a difference between the “No graphic” and “Graphic” condition regarding the time spent on the environmental KPI (7.79s vs. 7.69s). The difference in attention between conditions regarding the time spent on non-financial performance indicators seems to be driven by the time spent on the social KPIs (“No graphic” condition: 12.21s, “Graphic” condition: 17.05s). This is the category containing the three non-financial KPI included in the graphic. Thus, the graphic appears to have only an effect on the specific KPIs shown in the model, and does not seem to produce a spillover effect.

Heat maps (Figure 3, Panel A and B) help to visually illustrate these results. The heat maps are based on the participants’ aggregated eye-tracker data and show the areas of the performance data table on which the participants focused the most. Hereby, red color indicates a higher intensity or a higher amount of time spent inside the respective areas.

Figure 3: Heat Maps of the KPI Table by Condition

Panel A: “No graphic” Condition

ProIT Performance Summary € millions, unless otherwise stated			
Financial key performance indicators	2012	2011	Change in %
Software subscription revenue	1'282	1'031	24.3
Cloud subscription revenue	780	583	33.8
Software and software-related service revenue	3'178	2'830	12.3
Total revenue	5'240	4'444	17.9
Operating profit	1'301	1'220	6.6
Operating margin in %	24.8	27.5	-9.6
EBIT	1'429	1'284	11.3
EBIT Margin	27.3	28.9	-5.6
Free cash flow	820	833	-1.5
Net liquidity	367	409	-10.3
Days' sales outstanding (DSO)	75	60	25.0
Equity ratio (total equity in % of total assets)	53	55	-3.5
Research and development expenses	563	485	16.2
Research and development expenses in % of total revenue	10.8	10.9	-1.5
Shares and dividend	2012	2011	Change in %
Weighted average shares, basic in millions	297	297	0.0
Earnings per share in €	2.6	2.9	-10.0
Dividend per share in €	1.0	1.1	-9.1
Share prices at year-end in €	48.7	40.9	19.2
Market capitalization in € billions	14.5	12.1	19.2

Employees and Customers	2012	2011	Change in %
Number of employees at year-end (based on Full-Time Equivalents FTE)	16'106	14'944	7.8
Personnel expenses per employee - excluding share-based compensation (FTE)	110	107	2.8
Employee engagement in %	88.6	75.0	18.1
Business Health Culture Index in %	66	65	1.5
Women in % (FTE)	30	30	0.0
Female managers in %	19.4	18.7	3.7
Employee retention in % (FTE)	96.0	88.6	8.4
Customer Satisfaction: Net Promoter Score	8.0	7.1	12.7
Customer Retention: Ratio of New Customers to Lost Customers in %	14.4	14.0	2.9
Environmental	2012	2011	Change in %
Greenhouse gas emissions in kilotons	123	122	0.8
Greenhouse gas emissions per employee (FTE) in tons	7.6	8.2	-6.5
Greenhouse gas emissions per € revenue in grams	23.5	27.5	-14.5
Total energy consumed in GWh	220	215	2.3
Energy consumed per employee (FTE) in MWh	13.6	14.3	-4.9
Renewable energy sourced in %	49.5	47.0	5.3
Data center energy consumed in GWh	40	39	2.6
Data center energy per employee (FTE) in KWh	2'725	2'824	-3.5

Panel B: “Graphic” Condition

ProIT Performance Summary € millions, unless otherwise stated							
Financial key performance indicators				Employees and Customers			
	2012	2011	Change in %		2012	2011	Change in %
Software subscription revenue	1'282	1'031	24.3	Number of employees at year-end (based on Full-Time Equivalents FTE)	16'106	14'944	7.8
Cloud subscription revenue	780	583	33.8	Personnel expenses per employee - excluding share-based compensation (FTE)	110	107	2.8
Software and software-related service revenue	3'178	2'830	12.3	Employee engagement in %	88.6	75.0	18.1
Total revenue	5'240	4'444	17.9	Business Health Culture Index in %	66	65	1.5
Operating profit	1'301	1'229	5.8	Women in % (FTE)	30	30	0.0
Operating margin in %	24.8	27.5	-9.8	Female managers in %	19.4	18.7	3.7
EBIT	1'429	1'284	11.3	Employee retention in % (FTE)	96.0	88.6	8.4
EBIT Margin	27.3	28.9	-5.6	Customer Satisfaction: Net Promoter Score	8.0	7.1	12.7
Free cash flow	820	833	-1.5	Customer Retention: Ratio of New Customers to Lost Customers in %	14.4	14.0	2.9
Net liquidity	367	409	-10.3	Environmental			
Days sales outstanding (DSO)	75	60	25.0		2012	2011	Change in %
Equity ratio (total equity in % of total assets)	53	55	-3.5	Greenhouse gas emissions in kilotons	123	122	0.8
Research and development expenses	563	485	16.2	Greenhouse gas emissions per employee (FTE) in tons	7.6	8.2	-6.5
Research and development expenses in % of total revenue	10.8	10.9	-1.5	Greenhouse gas emissions per € revenue in grams	23.5	27.5	-14.5
Shares and dividend				Total energy consumed in GWh	220	215	2.3
	2012	2011	Change in %	Energy consumed per employee (FTE) in MWh	13.6	14.3	-4.9
Weighted average shares, basic in millions	297	297	0.0	Renewable energy sourced in %	49.5	47.0	5.3
Earnings per share in €	2.6	2.9	-10.0	Data center energy consumed in GWh	40	39	2.6
Dividend per share in €	1.0	1.1	-9.1	Data center energy per employee (FTE) in KWh	2'725	2'824	-3.5
Share prices at year-end in €	48.7	40.9	19.2				
Market capitalization in € billions	14.5	12.1	19.2				

While the left side of the table in general seems to have received more attention than the right side, the heat map of the participants in the “Graphic” condition shows a higher intensity inside the AoI SOCIAL. No differences seem to exist for the AoI ENV.

Tests of Hypotheses

H1 predicts that making a key driver model with positive performance indicators graphically salient guides investors’ attention to it. To test H1, we use time as measured by the eye-trackers as proxy for attention. As the right half of the table contained the non-financial performance indicators allegedly driving financial performance, we compare how much time participants in the “Graphic” condition spent on the right half of the table to the time spent by participants in the “No graphic” condition (Table 4, Panel A).

Table 4: t-Tests for Key Measures

		“No graphic”	“Graphic”
<i>Panel A: Attention Measures</i>			
TABLELEFT ^a	Mean	59.66	49.78
	t-test	t= 1.008, p= .328	
TABLERIGHT ^b	Mean	21.65	27.98
	t-test	t= 1.218, p= .120	
TABLERIGHT_REL_PAGE ^c	Mean	.23	.32
	t-test	t= 2.006, p= .031**	
TABLERIGHT_REL_AOI ^d	Mean	.26	.38
	t-test	t= 2.023, p= .030**	
SOCIAL ^e	Mean	12.21	17.05
	t-test	t= 1.407, p= .089*	
ENV ^f	Mean	7.79	7.69
	t-test	t= .043, p= .966	
<i>Panel B: Investment Attractiveness</i>			
INV ^g	Mean	56.43	68.17
	t-test	t= 1.756, p= .049**	

Notes: All attention measures refer to the time spent inside the respective AoI and are measured in seconds.

^a TABLELEFT: Time [in s] spent on the left half of the performance data table.

^b TABLERIGHT: Time [in s] spent on the right half of the performance data table.

^c TABLERIGHT_REL_PAGE: Time [in s] spent on the right half of the performance data table relative to time spent on the page.

^d TABLERIGHT_REL_AOI: Time [in s] spent on the right half of the performance data table relative to time spent on all AoI.

^e SOCIAL: Time [in s] spent on the category Employees and Customers.

^f ENV: Time [in s] spent on the category Environmental.

^g INV: Assessment of the attractiveness of our firm as an investment opportunity [on a scale from 0 to 100].

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

Directionally consistent with our expectation, participants in the “Graphic” condition spent more time on the right half (27.98s vs. 21.65s), but this difference misses conventional levels of statistical significance closely ($t = 1.22$, $p = .12$, one-tailed).

However, it is also important to compare the participants’ behavioral differences between the two conditions based on relative values to learn something about the share of the time they spent on different AoI. Therefore, we additionally compare two relative measures, namely the time spent relative to either the time overall spent on the page or to the time spent on all the AoI.

Results show that differences for these relative measures are statistically significant (time relative to page: 32% vs 23%, $t = 2.01$, $p = .03$; time relative to all AoI: 38% vs. 26%, $t = 2.02$, $p = .03$; one-tailed). Taken together, these results corroborate H1.

As shown in the descriptive results, the graphic does not only seem to attract more attention per se, but also seems to draw attention away from the left half of the table containing the financial performance indicators (“Graphic” condition: 49.78s, “No Graphic” condition: 59.66s; difference statistically not significant: $t = 1.01$, $p = .33$, two-tailed). Thus, in addition, we test whether attention was rather directed on the right half of the KPI table dependent on whether participants were provided with the graphic first (Table 5).

Table 5: Attention for Non-financial Performance Information Regression Results

Dependent Variable	TIME		
	Model (1)	Model (2)	Model (3)
Time Measure	ABSOLUT	REL_PAGE	REL_AOI
Constant	59.66***	.64***	.74***
(p-value)	(.000)	(.000)	(.000)
TAB_RIGHT	-38.01***	-.41***	-.48***
(p-value)	(.000)	(.000)	(.000)
GRAPH	-9.87	-.09*	-.12**
(p-value)	(.159)	(.074)	(.044)
TAB_RIGHT*GRAPH	16.21*	.18**	.23**
(p-value)	(.069)	(.038)	(.022)
N	19	19	19

Notes: Results are based on a long dataset with standard errors clustered for participants (19 clusters). ABSOLUT refers to the time spent the half of the performance data table measured in s. REL_PAGE refers to the time on table half relative to the total time spent on the table page. REL_AOI refers to the time on table half relative to the total time spent on all AoI. TAB_RIGHT is 0 for data reported in the left half of the table (financial KPIs) and 1 for data in the right (non-financial KPIs). GRAPH is 0 for participants in the “No graphic” condition and 1 for participants in the “Graphic” condition.

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

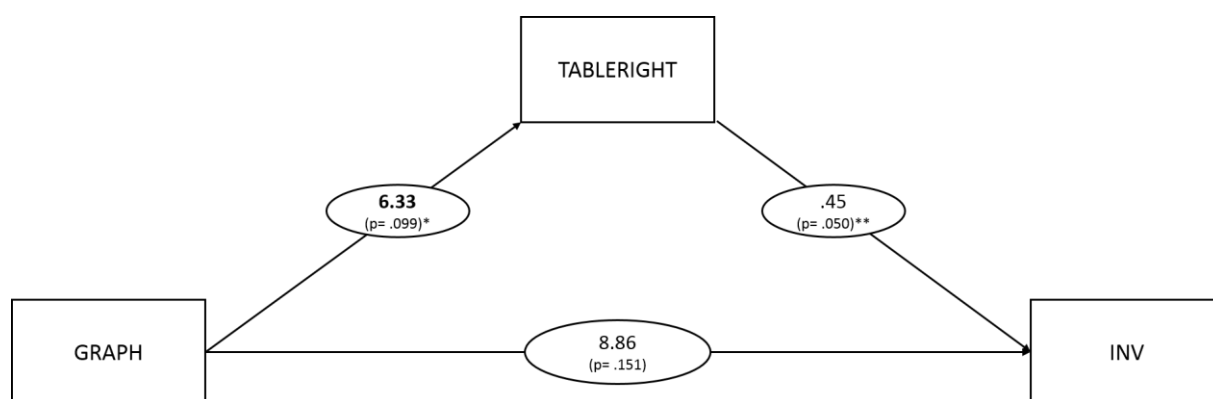
Our independent variables are a dummy variable for the side of the KPI table (0 for left and 1 for right), a dummy for the manipulation whether participants saw the graphic (0 for the “No graph” and 1 for the “Graph” condition) and the interaction thereof. A significant positive interaction coefficient would support the idea that attention is redirected by the graphic. Again, we use different measures for our dependent variable: absolute time spent, time spent relative

to either the time overall spent on the page or to time spent on all the AoI. They all show a consistent pattern and the expected positive coefficient (absolute time: $\beta = 16.21$, $p = .07$; time relative to page: $\beta = .18$, $p = .04$; time relative to all AoI: $\beta = .23$, $p = .02$, one-tailed). These further results are in line with the theoretical reasoning behind H1.

H2 predicts that making a key driver model with positive performance indicators graphically salient increases a reporting firm's attractiveness as investment. We test H2 by comparing the investment attractiveness between the "No graphic" and "Graphic" conditions as assessed by participants. Participants in the "Graphic" condition assigned a higher score (68.17) than participants in the "No graphic" condition (56.43). A t-test shows that this difference is statistically significant (Table 4, Panel B: $t = 1.76$, $p < .05$, one-tailed).

H1 and H2 together predict a mediation such that a graphic increases the attention for elements of a key driver model, which then results in a higher assessment of investment attractiveness when these key drivers are positive. Hence, we test this underlying theory with a system of equations that are estimated using Zellner's "seemingly unrelated regressions" (SUR) model (Zellner 1962; Greene 2012). The corresponding model is depicted in Figure 4.

Figure 4: Path Model



Notes: GRAPH is coded 1 when participants have seen a graphic and 0 otherwise. TABLERIGHT is the time spent [in s] on the right half of the table containing the non-financial performance indicators. The dependent variable INV is the investment attractiveness as assessed by our participants [scale from 0 to 100].

***, ** and * denote significance at the 1 percent, 5 percent and 10 percent levels, respectively. P-levels are one-tailed for directional predictions and two-tailed otherwise.

In line with our theory, a graphic containing a key driver model (i.e. GRAPH = 1) directs investors' attention to the half of the table with the non-financial performance indicators TABLERIGHT ($\beta = 6.33$, $p < .10$, one-tailed). This increased attention spent on the positive non-financial performance indicators then increases investment attractiveness INV ($\beta = .45$, $p = .05$, one-tailed). The statistically insignificant coefficient ($\beta = 8.86$, $p = .15$, two-tailed) between GRAPH and INV suggests a full mediation.

To obtain a better understanding of the graphic's effect, we continue by analyzing our RQ. We want to explore whether a graphic increases attention directed to non-financial performance indicators in general or only to the specific ones included in the graphics. Our descriptive results suggest that the difference with regard to the attention directed at non-financial KPIs is mainly driven by differences in the AoI SOCIAL. This is the category containing the three non-financial KPI included in the graphic. T-test results (Table 4, Panel A) show that –consistent with our general theory– participants in the “Graphic” condition spent more time inside the AoI SOCIAL than “No graphic” participants (17.05 vs. 12.21: $t = 1.41$, $p\text{-value} = .09$, one-tailed). Again, results become stronger when the dependent variable is not the absolute time spent, but the time spent relative to the time spent on the total page or on all AoI: untabulated t-tests show that p-values (one-tailed) in these cases are .02 ($t = 2.19$) and .02 ($t = 2.29$). As already expected from reviewing the descriptive results, there is no difference for the AoI ENV (7.79 vs. 7.69, $t = .04$, $p\text{-value} = .97$). These results do not support the idea of a spillover effect. Rather, they suggest that only the KPI included in the graph receive more attention by investors. The results of the analysis of RQ are interesting because they suggest that firm's may highlight specific KPI very selectively without having to worry too much about any spillover effects.

Supplemental Analyses

Earnings vs. Shares

Following the theoretical explanation that a graphic can increase the salience of the specific performance indicators included in it, it could be interesting to follow up with an analysis of the financial performance indicators included in the graphic. Specifically, they were “Total Revenue” and “Operating Profit”: we classify them as belonging to the category of performance indicators for earnings and assign them an AoI EARNINGS. According to our theory and prior findings, this AoI might also receive more attention by participants in the “Graphic” condition.

For the absolute time, there are no differences between conditions (“No graphic”: 14.01 vs. “Graphic”: 14.67, $t = .162$, $p = .87$, two-tailed). However, again, it might be important to look at the time spent on EARNINGS in relation to the time spent on the AoI FINKPI. Relative to the time spent inside the whole AoI FINKPI, time spent inside EARNINGS is slightly higher in the “Graphic” condition than in the “No graphic” condition (38% vs. 32%). However, this difference misses conventional levels of significance closely ($t = 1.23$, $p\text{-value} = .12$, one-tailed, untabulated). This difference might be marginal because earnings numbers in general already receive a high interest by investors, which would limit the potential of a graphic to guide attention. Thus, making them salient might not lead to a strong increase of investors’ attention spent on well-known and established performance indicators, but rather with less established performance indicators: we expect the latter to be increasingly included stronger in emerging integrated reporting.

Interestingly, there seems to be another difference with regard to attention for other financial performance indicators. From reviewing the heat maps, it seems that –compared to participants in the “Graphic” condition– participants in the “No graphic” condition were more interested in data inside of the AoI SHARES. The connection to our main theory could be that investors without guidance from a visualization of the key driver model could be mainly interested in information about stock market data, e.g. performance indicators in our category on shares

and dividends. Participants having seen a graphic, however, might be thinking less about stock market data and more about the driving factors leading to an increase in a firm's earnings.

In line with this idea, the AoI SHARES received more attention by "No graphic" participants than by "Graphic" participants (14.14s vs. 10.05s). Untabulated results show that this difference, however, is statistically insignificant with absolute time spent as dependent variable ($t = 1.03$, $p\text{-value} = .32$; two-tailed). Still, a difference seems to exist in the AoI PERF (the area where the quantitative performance information is shown) inside SHARES ("No Graphic" vs. "Graphic": 8.11s vs. 4.27s, $t = 1.53$, $p = .15$, two-tailed, untabulated). Again, it might be important to examine relative measure in addition to the absolute time spent. Indeed, p -values decrease to levels indicating marginally significant differences for the time spent either relative to the time overall spent on the page or relative to the time spent on all the AoI (PERF inside SHARES: 8.9% vs. 4.5% and 10.5% vs. 5.0%, both $t > 1.94$, $p\text{-values} < .07$, two-tailed, untabulated). These results are consistent with our theory that investors think more about the link of non-financial key drivers and financial performance measures after this model was made visually salient than when this was not the case. Investors without this visual guidance rather seem to be interested in stock market related data.

Alternative Explanation: Increased Interest

An alternative explanation for our results could be that a graphic only increases the general interest in the firm and its reporting, which might motivate participants to spend more cognitive effort and to scrutinize the firm more. This might question our explanations at least for the absolute time measures. While, in general, relative measures corroborate our theory at least as good as absolute measure, we add a supplemental analysis to address this potential alternative explanation. We analyze whether the graphic increased the overall time spent by our participants on the page showing the KPI table. This could be the case because a graphical representation might have raised the general interest for the firm and because these participants had slightly more time available (135s instead of 120s). However, untabulated results show that there are no

statistically significant differences for time spent on the table page between the “No graphic” and “Graphic” condition –neither for the total time spent on the whole page nor for the time spent only on the table containing the AoI (time on page: 92.71s vs. 86.86s, time on all AoI: 81.30s vs. 77.76s; both $t < .55$, $p > .58$, two-tailed). Directionally, participants in the “No graphic” condition even spent slightly more time. If the graphic only increased the general interest in the firm and its reporting, we would expect participants in the “Graphic” condition to spend more time than participants in the “No Graphic” condition.

V. Conclusion

In an experiment, we show how a graphic included in a firm’s VD can influence professional investors’ decisions under time pressure: it can guide investors’ attention towards positive KPI to increase their salience and subsequently increase investors’ assessment of a firm’s investment attractiveness. By collecting and analyzing eye-tracker data, we can corroborate our theory that participants spent more time on the AoI containing the highlighted and particularly positive KPIs. Consistent with our theory, assessments of a firm’s investment attractiveness are higher when specific positive KPIs are made salient. Furthermore, we find no evidence that the increased salience produces a spillover of attention to other non-financial KPI not highlighted in our graphical representation.

Our results are important for firms because they highlight how firms can use graphics in their unregulated communication to persuade investors to invest in them. Graphically displaying the link between positive potential non-financial performance drivers and financial performance indicators can increase the salience of certain reporting elements, which may then influence investors’ decisions. Our results further suggest that firms can target their report users’ attention to specifically selected pieces of information.

As the firms’ discretion can improve or worsen investors’ decision, our study’s results are important for investors because they need to be aware that they may be unduly influenced by

firms' reporting decisions. This may be particularly problematic when their cognitive resources are scarce, e.g. under time pressure or when they experience stress on their job.

Our research further contributes to the emerging discussion on how the link between financial and non-financial information should be represented in integrated reports (e.g. Eccles and Saltzman 2011; Jensen and Berg 2012; Abeysekera 2013; Busco 2014). While there may exist problems when investors' attention is unduly influenced, guiding attention might be considered useful when it helps to convey important information about a firm that would go unnoticed without guidance. Thus, our research also contributes to a long-standing discussion on the usefulness of non-financial information for investors' decision-making, e.g. intangibles, intellectual capital, or Corporate Social Responsibility. It may inform standard setters and policymakers whether and how to regulate firms' disclosures and specifically the use of graphical elements (Brown et al. 2017).

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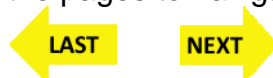
Appendix

Experiment Materials

Thank you for taking the time to participate at this valuation exercise, which will approx. take 5 minutes of your time.

Instructions:

1. Your task is to evaluate the performance of the company ProIT. The company is specialized in producing, implementing and maintaining business software. ProIT believes that, in general, employee satisfaction, customer satisfaction and other non-financial performance indicators are important drivers of financial success and therefore uses an Integrated Report to provide information on its financial and non-financial KPIs.
2. This valuation exercise is anonymous. We will not be able to link your name to any of the answers you will give.
3. This valuation exercise uses eye-tracking technology. The technology consists of multiple cameras following your eye movements. In order to calibrate the system to your eyes, you will be asked to follow a short calibration procedure at the beginning.
4. The valuation exercise consists of two parts: First, you will receive financial and non-financial information on the company ProIT. This information will be displayed on the monitor for **only 2:15 min** [*in No Graph condition: 2:00 min*]. Second, once you have finished your assessment of the information, we will ask you to provide an evaluation of the company's performance and to answer some additional questions.
5. [*Paragraph left out in No Graph condition.*] The information that you receive on company ProIT will be displayed on two different pages. You can use the yellow arrows on the bottom of the pages to navigate back and forth on your own:



6. If you want to finish your task before the time is up, click on the button in the upper right corner of the browser window that says: "Finish Task"
7. Any questions?

Start the exercise

Please follow the instructions on the screen: First look at the camera field below the screen, then follow and fixate the blue dots. In case there are problems with the calibration, please ask for our support.

ProIT Performance Summary [Note: Word copy of the html table used for the data collection.]

€ millions, unless otherwise stated

Financial key performance indicators	2012	2011	Change in %
Software subscription revenue	1'282	1'031	24.3
Cloud subscription revenue	780	583	33.8
Software and software-related service revenue	3'178	2'830	12.3
Total revenue	5'240	4'444	17.9
Operating profit	1'301	1'220	6.6
Operating margin in %	24.8	27.5	-9.6
EBIT	1'429	1'284	11.3
EBIT Margin	27.3	28.9	-5.6
Free cash flow	820	833	-1.5
Net liquidity	367	409	-10.3
Days' sales outstanding (DSO)	75	60	25.0
Equity ratio (total equity in % of total assets)	53	55	-3.5
Research and development expenses	563	485	16.2
Research and development expenses in % of total revenue	10.8	10.9	-1.5
Shares and dividend	2012	2011	Change in %
Weighted average shares, basic in millions	297	297	0.0
Earnings per share in €	2.6	2.9	-10.0
Dividend per share in €	1.0	1.1	-9.1
Share prices at year-end in €	48.7	40.9	19.2
Market capitalization in € billions	14.5	12.1	19.2

Employees and Customers	2012	2011	Change in %
Number of employees at year-end (based on Full-Time Equivalents FTE)	16'106	14'944	7.8
Personnel expenses per employee – excluding share-based compensation (FTE)	110	107	2.8
Employee engagement in %	88.6	75.0	18.1
Business Health Culture Index in %	66	65	1.5
Women in % (FTE)	30	30	0.0
Female managers in %	19.4	18.7	3.7
Employee retention in % (FTE)	96.0	88.6	8.4
Customer Satisfaction: Net Promoter Score	8.0	7.1	12.7
Customer Retention: Ratio of New Customers to Lost Customers in %	14.4	14.0	2.9
Environmental	2012	2011	Change in %
Greenhouse gas emissions in kilotons	123	122	0.8
Greenhouse gas emissions per employee (FTE) in tons	7.6	8.2	-6.5
Greenhouse gas emissions per € revenue in grams	23.5	27.5	-14.5
Total energy consumed in GWh	220	215	2.3
Energy consumed per employee (FTE) in MWh	13.6	14.3	-4.9
Renewable energy sourced in %	49.5	47.0	5.
Data center energy consumed in GWh	40	39	2.6
Data center energy per employee (FTE) in KWh	2'725	2'824	-3.5

Questionnaire

Question 1:

How do you evaluate ProIT as an investment opportunity on a scale from 0 to 100 (with 0 being 'poor investment' and 100 being 'excellent investment')?

Question 2:

How do you evaluate the **financial** performance of ProIT on a scale from 0 to 100 (with 0 being 'weak financial performance' and 100 being 'excellent financial performance')?

Question 3:

How do you evaluate the **non-financial** performance of ProIT on a scale from 0 to 100 (with 0 being 'weak non-financial performance' and 100 being 'excellent non-financial performance')?

Please also indicate your agreement with the following statements:

I am very confident about the investment evaluation I made.

1	2	3	4	5	6	7
Fully disagree						Fully agree

I am very confident about the evaluation I made regarding the financial performance.

1	2	3	4	5	6	7
Fully disagree						Fully agree

I am very confident about the evaluation I made regarding the non-financial performance.

1	2	3	4	5	6	7
Fully disagree						Fully agree

The customer KPIs provided are an important input for the valuation of ProIT.

1	2	3	4	5	6	7
Fully disagree						Fully agree

The employee KPIs provided are an important input for the valuation of ProIT.

1	2	3	4	5	6	7
Fully disagree						Fully agree

The environmental KPIs provided are an important input for the valuation of ProIT.

1	2	3	4	5	6	7
Fully disagree						Fully agree

The valuation task was difficult.

1	2	3	4	5	6	7
Fully disagree						Fully agree

The valuation case was realistic.

1	2	3	4	5	6	7
Fully disagree						Fully agree

Which financial and non-financial KPIs were most important for your valuation of ProIT (multiple answers possible)?

Which additional information or KPIs would have been necessary for you to provide a more thorough valuation of the company (multiple answers possible)?

Additional questions:

Thank you for having participated in the valuation exercise. Finally, we would like to ask you to provide a few personal details. Recall that your answers will remain completely anonymous and that we will not be able to link your answers to identity.

What is your occupation?

- ☐ Sell-side analyst
☐ Buy-side analyst
☐ Fund/Asset/Portfolio manager
☐ Other, please specify: _____

What is the number of years of your experience with investment valuation?

What is the **overall** number of years of your professional experience?

What is the number of years of professional experience **in your current occupation**?

Thank you for your cooperation!

SELBSTÄNDIGKEITSERKLÄRUNG

Ich erkläre hiermit, dass ich diese Arbeit selbständig verfasst und keine anderen als die angegebenen Quellen benutzt habe. Alle Koautorenschaften sowie alle Stellen, die wörtlich oder sinngemäss aus Quellen entnommen wurden, habe ich als solche gekennzeichnet. Mir ist bekannt, dass andernfalls der Senat gemäss Artikel 36 Absatz 1 Buchstabe o des Gesetzes vom 5. September 1996 über die Universität zum Entzug des aufgrund dieser Arbeit verliehenen Titels berechtigt ist.



Bern, 29. Mai 2018

Christoph Hörner